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The following works have been received:—

Resena del Primer Ejercicio del Instituto de Terapéutica operatioria del Hospital de la Princesa. Par el Dr. Federico Rubio S. Gali. Madrid, 1881.

Handbuch der Historisch-Geographischen Pathologie. Von Dr. August Kirsch, Prof. der Med. in Berlin, Zweite, Volstandige neue Bearbeitung. Erste Abtheilung: die Allgemeinen Acuten Infections Krankheiten. Stuttgart: Ferdinand Enke, 1881.

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Die Funktion der Bogengänge des Ohrlabyrinths. Von B. Berjinski. Berlin, 1881.

Ueber die Sogenannten Aphthösen Substanzverluste auf der Schleimhaut des Larynx, der Trachea und der Bronchien bei tuberculöser Lungenphthise. Von Dr. J. Mackenzie. Baltimore, Md., 1881.

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Nervous Diseases; their Description and Treatment. By Allan McLane Hamilton, M.D., Fellow of the New York Academy of Medicine, etc. Second edition, revised and enlarged. Philadelphia: Henry C. Lea's Son & Co., 1881.

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Chronic Club Foot. By JAMES S. GREEN, M.D. New York, 1881.

Thoughts upon Vivisection, with reference to its Restriction by Legislative Action. By GEORGE HAMILTON, M.D. Philadelphia.

On the Poisonous Properties of Quinine. By WILLIAM O. BALDWIN, M.D., of Montgomery, Ala.

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A Successful Case of Ovariotomy and Hysterectomy Combined. By P. V. SCHENCK, M.D., of St. Louis, 1881.

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Restriction and Prevention of Diphtheria. State Board of Health, Michigan, 1881.

A Case of Subacute Tetanus. By W. J. CONKLIN, M.D. Dayton, Ohio.

Primary Epithelioma of Larynx below Vocal Cords. By D. B. DELAVAN, M.D. New York, 1881.

A Case of Basedow's Disease. By HENRY G. CORNWELL, M.D., of Columbus, Ohio, 1881.

Correct Diagnosis of a rare case of Emphysema of the Lung, with Pneumothorax. With an Autopsy. By F. PEYRE PORCHER, M.D. Charleston, S. C., 1881.

A Case of Asynchronous Contraction of the Cardiac Ventricle, Reduplication of Heart Sounds. By F. P. HENRY, M.D., of Philadelphia. 1881.

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Transactions of the Medical Association of the State of Alabama. 1881.

Transactions of Massachusetts Medical Society. 1881. Vol. XII., No. VII.

Transactions of the Medical Society of the State of New Jersey. 1881.

Transactions of the American Otological Society. 1881.

Quarterly Transactions of Lancaster City and County Medical Society. Oct. 1881.

Transactions of Medical and Chirurgical Faculty of State of Maryland, 1881.

Proceedings of the Academy of Natural Sciences. Part II. 1881.

Transactions of the Michigan State Medical Society. Lansing, 1881.

Proceedings of the California Pharmaceutical Society. 1881.

Transactions of the Mississippi State Medical Society, Winona, 1881. Jackson, 1881.

Transactions of Medical Association of State of Missouri, 1880. St. Louis, 1881.

Transactions of South Carolina Medical Association, 1881. Charleston, 1881.

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Report of Section on Gynæcology of Medical Association of Georgia, 1881.

Report on Laryngeal Tumours. By E. FLETCHER INGALS, A.M., M.D. Chicago, 1881.

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Annual Report of Surgeon-General of United States Army. Washington, 1881.

Report of the State Board of Health, Lunacy, and Charity of Massachusetts, 1880.

Report upon the Births, Marriages, and Deaths in the City of Providence for 1880.

Report of the Health Department of San Francisco, 1880. San Francisco, 1881.

Annual Report of the State Board of Health of South Carolina. Oct. 1881.

The following Journals have been received in exchange:—

Canadian Journal of Medical Science, July to Nov. 1881.
Canada Lancet, July to Nov. 1881.
Canada Medical Record, June to Nov. 1881.
Canada Medical and Surgical Journal, June to Nov. 1881.
L'Union Médicale du Canada, June to Dec. 1881.
Alienist and Neurologist, July, Oct. 1881.
American Journal of Insanity, July, Oct. 1881.
American Journal of Obstetrics, July–Oct. 1881.
American Journal of Otology, Oct. 1881.
American Journal of Pharmacy, July to Dec. 1881.
American Practitioner, July to Nov. 1881.
American Specialist, July to Nov. 1881.
Annals of Anatomy and Surgery, July to Dec. 1881.
Archives of Dermatology, July, Oct. 1881.

Archives of Laryngology, July, Oct. 1881.
Archives of Medicine, Aug., Oct., Dec. 1881.
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Atlanta Medical and Surgical Journal, July to Dec. 1881.
Boston Medical and Surgical Journal, July to Dec. 1881.
Buffalo Medical and Surgical Journal, July to Dec. 1881.
Chicago Medical Journal and Examiner, July to Dec. 1881.
Chicago Medical Review, July to Dec. 1881.
Cincinnati Lancet and Clinic, July to Dec. 1881.
Cincinnati Medical News, June to Nov. 1881.
College and Clinical Record, July to Oct. 1881.
Detroit Lancet, July to Dec. 1881.
Detroit Clinic, Jan. 1882.
Druggists' Circular, July to Dec. 1881.
Gaillard's Medical Journal, June to Oct. 1881.
Journal of Nervous and Mental Diseases, July, 1881.
Independent Practitioner, Oct. 1881.
Kansas Medical Index, July to Nov. 1881.
Louisville Medical News, July to Dec. 1881.
Maryland Medical Journal, June to Dec. 1881.
Medical Gazette, July to Dec. 1881.
Medical Herald, July to Nov. 1881.
Medical Annals, Oct., Nov. 1881.
Michigan Medical News, July to Dec. 1881.
Medical News and Abstract, July to Dec. 1881.
Medical and Surgical Reporter, July to Dec. 1881.
Medical Record, July to Dec. 1881.
Mississippi Valley Medical Monthly, Aug. to Nov. 1881.
Nashville Journal of Medicine and Surgery, July to Dec. 1881.
New England Medical Monthly, Oct., Nov. 1881.
New Orleans Medical and Surgical Journal, July to Dec. 1881.
New Remedies, July to Dec. 1881.
New York Medical Journal and Obstetrical Review, July to Dec. 1881.
North Carolina Medical Journal, June to Nov. 1881.
Northwestern Lancet, Oct., Dec. 1881.
Obstetric Gazette, June to Dec. 1881.
Ohio Medical Journal, July to Nov. 1881.
Pacific Medical and Surgical Journal, June to Nov. 1881.
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St. Louis Clinical Record, May to Oct. 1881.
St. Louis Courier of Medicine, June to Dec. 1881.
St. Louis Medical and Surgical Journal, July to Dec. 1881.
Therapeutic Gazette, June to Nov. 1881.
Virginia Medical Monthly, July to Nov. 1881.
Western Medical Reporter, Aug. to Nov. 1881.

The usual foreign exchanges have been received; their separate acknowledgment is omitted for want of space.

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4. Études Cliniques sur l'Hystéro-Épilepsie, ou Grande Hystérie. Par le Dr. Paul Richer. Précédé d'une Lettre-Préface de M. le Professeur J. M. Charcot. Paris, 1881. Chapitres V., VI., VII., et VIII., sur Hypnotisme—Catalepsie, Léthargie, et Somnambulisme Hysteriques Provoqués.
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XXVII. Observations on Fatty Heart; Comprising Remarks on the Morbid Anatomy, Symptoms and Diagnosis, Prognosis, Etiology, and Treatment. An Essay. By Henry Kennedy, A.B., M.B., University of Dublin, etc. etc. 12mo. pp. 171. Dublin: Fannin & Co., 1880 211

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THE

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FOR JANUARY 1882.

ARTICLE 1.

THE TOTAL EXTIRPATION OF THE UTERUS THROUGH THE VAGINA.[1]

By CHRISTIAN FENGER, M.D., of Chicago, Illinois.

THIS important operation is one of the latest conquests of modern, that is to say, antiseptic surgery, and, for the right to carry out this operation into practical life, we are indebted to Czerny, Schröder, Billroth, and Mikulicz. This is another illustration of the old saying that "there is nothing new under the sun," as total extirpation of the uterus was not only thought of, but performed, as far back as 100 A. D., by Soranos, and in the course of the following centuries, was occasionally performed in cases where a prolapse of the organ made the extirpation both imperatively indicated and reasonably practicable in conformity with the status of surgery at that time.[2]

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[1] Read before the Chicago Medical Society, November 7, 1881.

[2] The first extirpation in this century of the prolapsed uterus was made by K. M. Langenbeck, for cancer, in 1813. The patient recovered, and the case was for many years the occasion of unjust doubt and criticism in the literature, until finally, thirty years after, the autopsy showed that the operation had been complete. It was Langenbeck's description of his operation that led Czerny to extirpate a non-prolapsed uterus through the vagina. It is needless to state that the extirpation of a prolapsed uterus is much easier and in reality an entirely different operation from that which we are now considering, because not only the fundus uteri but also the broad ligaments and ovaries are usually outside of the vulva and within easy reach of the operator. Consequently, there is no great technical difficulty in the operation.

A recent case of the extirpation of a prolapsed uterus was reported in 1880 by Dr. John C. Blake (*Boston Medical and Surgical Journal*, April 14, 1881) in which no cancer was demonstrated. His method of operation is rather difficult to comprehend, and his ligature *en masse* of the whole amount of tissue above what he calls the "fundus," but which probably was the cervix, is so primitive a procedure that I should deem it hardly permissible at the present time. The patient died twelve hours after the operation. The cause of death was unknown, as no autopsy was made.

But it was not until the commencement of the present century, with its numerous and fruitful impulses in the direction of methodical and scientific progress in our science, that any serious attention was directed to this subject. Mikulicz, in his interesting monograph on this subject,[1] states that a prize was offered by the Josef's Academie of Vienna, for the best essay on this subject, and the prize was awarded in 1814 to Gutberlet, who proposed a method of extirpation by abdominal section, which resembled in its main features Freund's method, and was performed sporadically several times in later years, and then fell into disuse, until Freund, half a decade ago, by the aid of the antiseptic method, again brought it systematically before the profession.

The prognosis of this abdominal operation in the course of a few years was shown to be so unfavourable that Ahlfeld's statistics, founded on not less than 66 cases, showed a mortality of 49, that is, 74 per cent., caused by the operation itself; 4 operations had to be abandoned, and only 13 patients, or about 20 per cent., recovered. It was natural that an operation so dangerous in itself, if not entirely abandoned, would at least lead the profession to consider very seriously the question of the attainment of the same end by a safer method of operation.

The total extirpation of the uterus through the vagina had previously been performed in isolated cases. In all probability the first operation of this kind was performed by Sauter in 1822, from which the patient recovered, notwithstanding the opening of the bladder. Récamier operated in 1829 in one case with good results, and, after him, several others, but usually with fatal results. The operation was consequently abandoned until Czerny reintroduced it with one successful case in 1879.[2] The first successful case was speedily followed up by Billroth and Mikulicz in Vienna and Schröder in Berlin. To the latter we are indebted for our knowledge of the comparative safety of the operation, as in 1881 he issued a most brilliant statistical report[3] of eight operations with seven recoveries and only one death, which was not caused by peritonitis or septicæmia, but from a probably unavoidable internal hemorrhage from a ruptured vessel in one of the broad ligaments.

The operations reported in the literature accessible to me up to the time of my operation were the following:—

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[1] Wiener Medizinische Wochenschrift, 1880, No. 47 *et seq.*

[2] Ibid., No. 45, 1879, p. 1172; Ueber die Ausrottung des Gebärmutterkrebses.

[3] Zeitschrift für Geburtshülfe und Gynäkologie, Band vi. Heft 7, 1881, page 226.

Operator.	Cases.	Recoveries.	Deaths.	Unfinished operations.
Czerny	2	2	0	0
Billroth	7	4	3	0
Schröder	8	7	1	0
Merike[1]	1	1	0	0
Tarsini[2]	1	1	0	0
Martin[3]	12	6	3	3
Ohlshauser[4]	6	6	0	0
Bauer	4	2	2	0
Lane	1	1	0	0
Kaltenbach	1	1	0	0
Bompiani	1	0	1	0
Bardenheuer	1	0	1	0
Totals	45	31	11	3

As it will be seen from the above tabular statement, 69 per cent. of those operated upon recovered, 24 per cent. died, and in 7 per cent. of the cases the operation was unfinished. Taking into consideration that the statistics, although from a relatively small number of operations, still showed such unexpectedly favourable results from a new and almost untried method, I did not hesitate, after careful investigations upon the cadaver, to resort to the operation in the following case :—

Case. *Mixed Cylindrical and Multiform Celled Carcinoma of the Cervix and lower half of the Fundus of the Uterus, of over Eight Months' Standing.—Enlargement of the fundus—No tangible infiltration of the broad ligaments, bladder, rectum, or vagina—Total extirpation through the vagina—Opening of the bladder—Permanent irrigation—Slight transient cystitis—Slight rise in temperature for two weeks—Temporary vesico-vaginal fistula, which closed spontaneously after four weeks—Complete recovery from the operation.*—Mrs. H., forty years of age, parents still living and healthy. No consumption or cancer in the family. She has always been spare, but otherwise healthy. Menstruation commenced at fifteen, and has always been regular. She was married at eighteen, and has had nine children. Delivery was always easily accomplished, without the aid of forceps. Of the nine children, the first two died when eighteen months old, and the fifth when two years old, from diphtheria.

Eighteen months previous to the operation she became pregnant, until which time her menses were regular. Towards the end of pregnancy, however, she felt more tired and weak than had been usual when in this condition, and, when standing, she would have a feeling of bearing down or pressure in the lower part of the pelvis, which was of a more distressing character than that experienced during any of her former pregnancies. There was never any hemorrhage, but often considerable pain, irradiating from the pelvis down the left leg.

In due time, nine months previous to the operation, she was delivered, and, during the act of delivery, noticed a peculiar cutting character of the pains, which she had not experienced in former confinements, and the after-pains, during childbed, which lasted for nine days, were, she noticed, of a similar character. There was less hemorrhage than usual during this time. When she got up she experienced a sensation as if something heavy had been left in the pelvis, and, a few weeks later, when she had recovered her usual strength, she felt pulsation, dull pain, and bearing down, giving her the idea that something was not as it should be. The midwife who attended her told the relatives that while exploring during the delivery, she had felt something unusual, like a hard lump.

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[1] Zeitschrift für Geburtshülfe und Gynäkologie, B. 6, H. 2, 1881, p. 415; Bericht über die Verhandlungen der Gesellschaft für Geburtshülfe und Gynäkologie, zu Berlin.

[2] Gazetta Medica Italiana Lombardia, No. 15, 1881.

[3] Centralblatt für Gynäkologie, No. 8, 1881, p. 189.

[4] Berliner Klinische Wochenschrift, No. 35, 1881. Ueber, Total extirpation des uterus uach 10 eigenen falien.

Nine weeks later, a slight hemorrhage set in, which continued more or less up to the time of operation, and which occurred in the following way: Every two or three days she would have bearing-down pains, and a sensation as if something turned around, and then suddenly a quantity of blood would be discharged at once, after which there would be no hemorrhage for a couple of days, when the same series of symptoms would recur. The quantity of blood discharged increased slowly but gradually from month to month, until in July, 1881, the hemorrhages became so severe and the intervals so short that she was obliged to remain in bed for three weeks. During this time she made use of some medicine internally, and the hemorrhage ceased, but returned when she got out of bed. In the latter part of August and September the hemorrhages were less severe, but would still recur every two or three days, accompanied by the usual symptoms.

During the whole summer of 1881 she lost strength, her appetite became poor, and her condition more and more anæmic. August 14, I was called to see her, in consultation with Dr. Mead. The examination showed the following condition. The patient was pale, thin, of medium height, weight about one hundred and thirty pounds; lips and conjunctiva pale; lungs and heart normal; the abdominal walls somewhat flabby, but palpation and percussion normal. Vaginal examination revealed considerable enlargement of the vaginal portion of the uterus; the external os was sufficiently large to admit the end of the finger, and hard, irregular, and nodulated to the touch. In the anterior and posterior lacunæ no isolated tumours could be felt. Combined external and internal examination showed the uterus to be movable and the fundus somewhat enlarged, but not particularly tender. There was no enlargement of the ovaries, and no hardness or thickening or nodulated condition of either of the broad ligaments, but palpation of the broad ligament on the right side, with deep pressure, caused her some pain. Combined vaginal and rectal examination revealed no thickening of the recto-vaginal tissues anywhere, and palpation of the bladder through the anterior lacuna did not reveal any hardened tissue outside of the thickened vaginal portion. After the introduction of Sims's speculum, the vagina was found to be filled with blood, after the removal of which, the vaginal portion of the uterus was seen to be enlarged to a large tumour of about one and one half inches in diameter. The external os formed a funnel-shaped cavity one centimetre deep and one and one-half centimetres in diameter, presenting an excavated, irregular, cancerous ulcer, partly covered with discoloured grayish-white, necrotic tissue, partly with grayish-red tissue, from which a considerable hemorrhage was steadily going on. The remainder of the vaginal portion had a whitish, somewhat nodular appearance, but was covered all over with healthy mucous membrane; in the posterior and anterior lacunæ as well as in the rest of the vagina, the mucous membrane was normal, and no isolated cancerous tumours were to be seen anywhere. The uterine probe showed the uterine canal somewhat enlarged and about four inches in length. A piece of the vaginal portion was removed from the border of the ulcer, for microscopical examination. The urine was dark coloured, clear, acid, and contained neither albumen, sugar, nor blood, and no cellular elements of any kind.

Microscopical examination of the hardened piece of excised tissue showed epithelial carcinoma, with large irregularly shaped alveoli, wholly or partly clad with a single or double layer of cylindrical epithelial cells, and filled and partly clad with large multiform epithelial cells with large oval nuclei.

Diagnosis.—Epithelial carcinoma with preponderating cylindrical epithelial cells, originating in the mucous membrane of the cervix uteri, involving the whole of the tissues of the cervix and probably extending high up in the cavity of the uterus. No extension of the carcinoma either into the rectum or bladder, or, to any palpable degree, into the broad ligaments.

The following plan for an operation was proposed and accepted. Everything was to be prepared for the total extirpation of the uterus through the vagina; the operation to be commenced with a view of making a supra-vaginal amputation only, if this procedure would enable me to remove the whole of the diseased tissue. But if this proved insufficient, the total extirpation of the organ should be immediately performed.

As the patient stated that at regular intervals she had sensations, though indistinct, similar to those during her menses in former times, but which still were distinct enough to enable her to differentiate between such a period of hemorrhage and the continuous hemorrhage described above, I resolved to wait for two weeks until one of these periods should be just over, before proceeding to operate, as in one of Schröder's cases, considerable pain and distress had occurred during the after-treatment of an extirpation, just at the time at which the patient expected her menses tc set in.

In the second week of September, the patient stated that the hemorrhage was accompanied by the usual sensations of the period, which terminated about the fifteenth of the month, and consequently, the nineteenth was fixed upon as the day of operation. During this interval of four days, the following preparatory treatment was enacted: The patient was kept in bed most of the time; kept on liquid diet; the bowels were moved every day, by the use of compound licorice powder at bedtime; and the vagina was washed out twice a day with three per cent. solution of carbolic acid, which sometimes caused slight burning sensations in the vulva.

Operation.—On September 19, assisted by Drs. S. D. Jacobson and E. W. Lee, of the staff of Cook County Hospital; Dr. Truman W. Miller, of the United States Marine Hospital Service; Dr. J. B. Murphy of Chicago; Dr. Bradley, House Surgeon, and Dr. Kendall, Interne of Cook County Hospital, I operated in the following manner:—

The patient was anæsthetized with ether by Dr. Kendall; placed in the lithotomy position on a table immediately opposite a window, through which the sunlight would thoroughly illuminate the field of operation. Dr. Lee, standing on the left side of the patient, made compression of the abdominal aorta. Drs. Jacobson and Miller, on the right and left side of the patient, held the femora, and each held also a Simon's speculum in the vagina. Dr. Murphy, at my right hand, had charge of the carbolized sponges for cleansing the field of operation, and Dr. Bradley, at my left hand, had charge of the instruments.

By means of a strong vulsellum forceps, the vaginal portion of the uterus was drawn down towards the vulva, but the cancerous tissue in which it was inserted, was so friable that the forceps tore through several times, and only a moderate degree of force and traction could be employed. By means of a slightly-curved scissors, a circular incision was made through the vaginal mucous membrane, at the upper circumference of the vaginal portion, about one and one-half centimetres from the ulcerated surface of the os. The loose, submucous connective tissue was separated with blunt instruments, so as to detach the bladder and rectum from the tumefied neck of the uterus. In detaching the posterior wall of the bladder from the latter, it was found that hard cancerous tissue had infiltrated a part of the muscular coat of the bladder, and in removing this infiltrated tissue the bladder was opened, notwithstanding that its neck was held down towards the vulva by introduction through the urethra of a urethral sound having a short curve. The opening in the bladder represented a transverse slit one and one-half to two inches in length. The wall of the bladder posterior to the opening was taken hold of by a long hæmostatic forceps and held up towards the symphysis pubis. A heavy double silk ligature was passed through the upper part of the neck from the posterior to the anterior surface, the ends knotted, and the ligature used as a loop by means of which the uterus was drawn further down towards the vagina. In both lateral regions the connective tissue was too resistant to be detached from the sides of the neck by blunt instruments, and on this account I was obliged to cut it through with the curved scissors. This necessitated the ligation of several small vessels.

The whole of the neck having thus been exposed, the uterus was drawn further down, but the loop of heavy silk thread tore through the soft cancerous tissue of the neck, and I was obliged to resort again to the use of the vulsellum forceps.

With a view of limiting the operation to a supra-vaginal amputation if possible, I cut off with the curved scissors, the left half of the neck clear into the canal, and through the opening thus made introduced a finger into the uterine canal, where the exploration revealed irregularly nodulated and hard tumefied portions of the mucous membrane, reaching up towards the fundus. I consequently abandoned the idea of supra-vaginal amputation, and proceeded at once with the total extirpation of the organ. As the first step in the attainment of this end, I removed with a sharp spoon all the soft and decayed cancerous tissue of the ulcerated surface of the vaginal portion and the canal of the neck, so as to avoid septic infection from the side of the decayed tissue of the ulcerated surface when, later in the operation, it had to be inverted and turned into the peritoneal cavity. Next the anterior cul-de-sac, that is the vesico-uterine fossa, was opened by the scissors and the finger introduced into the peritoneal cavity. Using the finger as a guide, this opening was dilated outward on both sides by the scissors, keeping close to the body of the uterus until the anterior surface of the lateral ligaments was reached. The left index finger was then pushed up and around the body of the uterus, which was found to be somewhat enlarged but not adherent to any of the opposite surfaces of the peritoneum, and was therefore partly movable. The left hand was now withdrawn and the neck held up towards the symphysis pubis, by means of the vulsellum forceps, and the posterior cul-de-sac opened in a similar manner, always keeping close to the body of the wound. The latter opening having been dilated laterally as far as the posterior surface of the lateral ligaments, the body of the uterus was anteverted by the left index finger, and the vulsellum forceps attached to the tissue of the fundus, which was so soft as to tear asunder twice before I finally succeeded in drawing it down and out through the anterior cul-de-sac, into the vulva. The left index finger was then hooked around the left lateral ligament, the fundus held over to the right by an assistant, an armed aneurism needle pushed through the right lateral ligament from the posterior to the anterior surface, and thus the ligament was ligated in two halves. A single peripheral ligature was applied around the entire lateral ligament, just exterior to the double ligature, and then the lateral ligament was cut through at a point one-half centimetre interior to the double ligature, between the latter and the uterus. The large branches of the uterine artery were not bleeding to any extent, but were, nevertheless, secured by separate silk ligatures, which were cut off short. The body of the uterus could now be draw down outside of the vulva, and no difficulty was experienced in applying similar ligatures to the left lateral ligament. Thus the entire uterus was wholly detached and taken out through the vulva. The ligatures of the lateral ligaments were left with one end long enough to extend outside of the vagina.

Through the large opening in the peritoneum, made by the removal of the uterus, projected several portions of prolapsed intestine; namely, an ansa of the sigmoid flexure, two ansæ of the small intestine, and a portion of the omentum. The wound was washed out with a two and one-half per cent. solution of carbolic acid. The hemorrhage from the bleeding surfaces was not readily checked, but was finally controlled by two silk ligatures and the use of disinfected sponges. A disinfected sponge, attached to a silk ligature, was passed into the peritoneal cavity to retain in position the prolapsed intestines, and was allowed to remain until the wound in the bladder had been closed. The prolapsed mucous membrane of the latter was dark-red in color, and presented a dotted appearance, as if numerous small ecchymoses had taken place therein. By means of sharp hooks the muscular coat of the bladder was seized, and the wound united by sutures of fine silk, which were passed through the muscular coat only, running between the latter and the mucous membrane for half a centimetre on each side. Eight of these sutures were required for the perfect closure of the wound in the bladder. All of these sutures were cut off short, with the intention of leaving them in permanently.

The next step in the operation was the closure of the wound in the peritoneum. To this end the sponge was taken out of the peritoneal cavity, and the intestines carefully cleansed from the numerous small fibrinous clots upon them. The lateral ligaments were drawn down far enough, not only to permit the palpation, but also to inspect the surface of both of the ovaries, which were found perfectly healthy, and consequently were not disturbed. An armed needle was pushed through the vaginal mucous membrane, at each lateral end of the wound in the posterior lacuna; pushed through the lateral ligament exterior to the ligatures, and then brought out through the mucous membrane of the anterior lacuna and tied, thus securing the central ends of the lateral ligaments, which were thus held down in the vagina and kept from slipping up into the peritoneal cavity. The anterior and posterior flaps of the peritoneum were seized with sharp hooks and united by fine silk sutures, of which twelve were necessary for the perfect closure of the wound. The sutures were all cut off short and left in permanently. The slight hemorrhage caused by the stitching together of the peritoneal wound soon ceased on irrigation with two and one-half per cent. solution of carbolic acid, and the patient was put to bed on a narrow cot having a hair mattress.

Mikulicz's instrument for permanent irrigation of the vagina was introduced and fastened to a cincture around the abdomen. A lukewarm, one-tenth of one per cent. solution of thymol was used for the permanent irrigation. A flexible, soft-rubber catheter was inserted into the bladder and retained permanently. The peripheral end was held down in a vessel filled with five per cent. solution of carbolic acid.

The operation commenced at about three o'clock in the afternoon, and lasted two and one-half hours.

When the patient awoke from the narcosis, at about six P. M., she was pale and weak, but did not complain of any pain, and did not look collapsed to any considerable extent. Pulse 110; temp. 99°. 8 P. M. Pulse, 120; temp. 100°; respiration, 19. Rests quietly, and complains of no pain.

Sept. 20*th*. 1 A. M. Pulse, 120; temp. 100.2°. Has taken half an ounce of champagne, with bits of ice. The extremities are cold; applied hot cans to the feet. 7.30 A. M. Pulse 120; temp. 100.2°. Has rested quietly, complains of no pain, but speaks in a whisper, and appears weak. 2 P. M. Pulse 120; temp. 101.2°. Complains of pain in the abdomen, for which fifteen drops of laudanum were given, which was vomited up half an hour afterwards. She now took a tablespoonful of champagne with ice. 11 P. M. Pulse 120; temp. 102°. Complains of severe pain in the abdomen, for which fifteen drops of laudanum were given.

21*st*. 1 A. M. Pulse 120; temp. 101°. The patient has vomited several times, and complains of severe pain in the abdomen, for which a hypodermic injection of one-quarter of a grain of morphia was given. 8 A. M. Pulse 120; temp. 101°. Patient has rested since 1 A. M. As the pain in the abdomen had recurred, the hypodermic injection of morphia was repeated, and a pad of Lister's gauze dipped in hot carbolized water was applied over the abdomen. 4 P. M. Pulse 120; temp. 102°. She has taken small quantities of champagne and ice from time to time. The hypodermic injections of morphia quiet her for from four to five hours, but then have to be repeated as the pain recurs.

22*d*. 8 A. M. Pulse 120; temp. 101°. The patient passed a very restless night, but is quiet now. She sleeps for fifteen or twenty minutes only at a time. 9 A. M. Pulse 120; temp. 101.5°. She has taken half a cup of coffee, some milk, and champagne. Complains of burning sensation in the abdomen, but no pain. The urine passed through the permanent catheter contained a considerable deposit of pus, but was acid and of a normal odour. The bladder was washed out with a saturated solution of boracic acid. There is some tympanites, but no particular tenderness of the wall of the abdomen. She has passed no flatus, but says she feels that the passage of flatus would relieve the burning pain in the abdomen. A soft rubber catheter, having three additional holes cut in its walls was then inserted into the rectum and left there permanently. 10 P. M. Pulse 120; temp. 102.5°. The patient has had some pain in the abdomen during the day, which has been relieved by hypodermic injections of morphine every four to six hours. A considerable quantity of flatus has escaped through the tube in the rectum, which has eased her greatly. She has taken from time to time small quantities of milk, coffee, and champagne. Twice she has experienced slight nausea, which was relieved by swallowing small pieces of ice. In the afternoon she became restless, uneasy, and hot, and was given a sponge-bath of tepid water and alcohol. Towards evening she became a little delirious at intervals, and complained of burning pain in the wound, and wanted the irrigating solution cold instead of warm, which request was complied with. On account of the rise in temperature, she was given four grains of quinia every four hours.

23d. 5 A. M. Pulse 120; temp. 101.6°. During the night the patient has slept at intervals for half an hour at a time. Complains of great pain in the abdomen; has a weary expression. Asked for beer, which was given to her in small quantities. Tympanites less than yesterday. No dull percussion anywhere along the ascending or descending colon. The vagina is very sensitive, the least movement of the irrigator causing her intense pain.

The cover of the irrigator is removed three times a day, in order to cleanse the apparatus of the débris of necrotic tissue, and fibrinous clots of exudated matter, that are too large to pass through the efferent tube of the apparatus.

The vulva and the vagina present some œdematous swelling, and the mucous membrane of the latter protrudes through the holes in the inner half of the irrigator. These protrusions resemble globular polypi, and they as well as the wound at the bottom of the apparatus are covered with a soft, yellowish mass of fibrinous exudated matter looking like croupous membrane. The wound and the internal surface of the apparatus are cleaned as far as possible by means of salicylated cotton dipped in five per cent. solution of carbolic acid; the débris brought out by the cotton has a gangrenous odour.

The solution in the vessel into which the efferent tube of the apparatus discharges has a scarcely perceptible gangrenous odour, which is overcome in great measure by the odour of the thymol solution used for irrigation.

8 P. M. Pulse 120; temp. 102°. Has had less pain in the abdomen during the day; has taken considerable milk and champagne; has slept at intervals; complains of weakness.

24th. 8 A. M. Pulse 120; temp. 101°; less pus in the urine than yesterday. When the bladder is washed out, after the injection of about four ounces of boracic acid solution a portion escapes through the vagina. 12 Noon. Pulse 115; temp. 100°. The patient has had half an hour of natural sleep, and is perspiring profusely. 2 P. M. Pulse 115; temp. 101.5°. Is sleeping and still perspiring freely. 4 P. M. Pulse 114; temp. 101.7°. Complains of no pain but of weakness and itching of the upper part of the back, where on examination an acute diffused eczema was found, which had been caused by the constant wetting of the sheets by the irrigating fluid, of which a part passed into the bed between the vulva and the irrigator, as the efferent tube was not sufficiently large to allow the escape of the entire amount. 6.30 P. M. Pulse 100; temp. 101.2°. 10 P. M. Pulse 112; temp. 101.2°. Has had a fit of coughing which caused some difficulty in breathing. Owing to her weakness, the exertion required to cough up the mucous matter from the throat produced a cold perspiration over the entire body, with a feeling of extreme exhaustion and almost imperceptible voice. The extremities were bathed with hot water and alcohol, and hot cans applied. Physical examination of the lungs showed normal percussion and respiration sounds, and no râles could be heard anywhere.

25th. 8 A.M. Pulse 104; temp. 101°; respiration 19. The patient rested well the remainder of the night, has no pain, partakes freely of champagne, beer, beef-tea, and coffee. She expectorates freely. The secretion from the wound is inodorous. The urine still contains pus. 10 A.M. Pulse 104; temp. 101°. 1 P.M. Pulse 104; temp. 101°. Says she feels well with the exception of pain in the sacral region from the bed-pan. 6 P.M. Pulse 104; temp. 101.2°. Is becoming restless and uneasy, but was relieved by a hypodermic injection of morphine.

26th. 8 A.M. Pulse 102; temp. 101.5°. The patient was restless until one o'clock this morning, but slept from two until four. Since that time she has been somewhat restless, principally on account of a superficial bed-sore of about the size of a dime, over the sacrum. The constant irrigating apparatus was removed with some difficulty owing to the polypus-like protrusions of the vaginal mucous membrane through the holes in the irrigator. Two of the ligatures around the broad ligaments were found to be loose and were removed. The whole of the inner surface of the vagina was superficially eroded and partially covered with yellowish adherent fibrinous matter. A double soft rubber drainage tube was now inserted, and retained in position by means of salicylated cotton covered with a layer of carbolized cosmoline. The patient was turned on the side and supported in this position by means of pillows. 12 Noon. Pulse 110; temp. 101.2°. She is resting better after a sponge-bath. 7 P.M. Pulse 100; temp. 101.2°. She has taken during the day, about eight ounces of beef-tea, with the yolk of an egg, champagne, coffee, a little chicken broth, and some Seltzer water.

27th. 8 A.M. Pulse 100; temp. 100.2°. The patient has slept several hours at a time during the night; she complains of frequent desire of micturition. The urine contains a little pus. A pill of camphor, two grains; opium, one grain, was ordered morning and night. The discharge through the drainage tubes has no offensive odour. 12 Noon. Pulse 104; temp. 100.6°. 5 P.M. Pulse 98; temp. 100.7°. The patient sleeps for half an hour at a time and complains of no pain. 12 Midnight. Pulse 100; temp. 100.6°. She feels somewhat weak, but complains only of pain in the calves of the legs, which was relieved by rubbing with alcohol.

28th. 9 A.M. Pulse 98; temp. 100.2°. The patient feels stronger and takes more food. 7.30 P.M. Pulse 100; temp. 100.4°. Has taken considerable liquid nourishment during the day; one egg, eight ounces of chicken soup, some beef-tea, besides champagne and beer.

29th. 9 A.M. Pulse 96; temp. 99.4°. She has slept considerably during the night, and her only complaint is in regard to the small bed-sore over the sacrum. 6 P.M. Pulse 96; temp. 100.8°. Has had an annoying cough during the day, which causes some pain in the left iliac region, especially when she lies on the left side. ℞. Tr. opii camphoratæ; Syrup. aurantii corticis, āā ʒj. M. Sig. every two or three hours. 12 Midnight. Pulse 96; temp. 100.2°.

30th. 9 A.M. Pulse 98; temp. 99.1°. The patient passed a somewhat restless night, but has had no pain and no cough. 1 P.M. Pulse 100; temp. 99.8°. Complains of some pain on urinating through the permanent catheter. Otherwise she feels well, and has a natural expression. She has taken to-day the first solid food since the operation; toast with her coffee in the morning, and a piece of fish and a little apple pudding at dinner. 6 P.M. Pulse 90; temp. 99.6°.

October 1st. 9 A.M. Pulse 90; temp. 98.4°. 7 P.M. Pulse 94;

temp. 100.3°. Some urine still passes through the vagina. When the bladder is washed out, about three ounces of the solution may be injected before any will pass through the vaginal drainage tube. When the urine passes through the latter, the patient complains of pain in the vulva on account of the superficial granulating erosions in the mucous membrane at this point, caused by the pressure of the irrigator during the first week after the operation. These ulcerated surfaces were covered with carbolized cosmoline applied to a tampon of salicylated cotton and placed around the ends of the drainage tube. The permanent catheter was removed.

2d. 10 A.M. Pulse 100; temp. 99.5°. 9 P.M. Pulse 94; temp. 100°.

3d. A.M. Pulse 100; temp. 99.7°. P.M. Pulse 100; temp. 100.5°.

4th. A.M. Pulse 100; temp. 99.7°. P.M. Pulse 96; temp. 100°.

5th. A.M. Pulse 96; temp. 99°. P.M. Pulse 96; temp. 100°.

6th. A.M. Pulse 90; temp. 99°. P.M. Pulse 96; temp. 99.7°. The patient's bowels, which had not moved since the operation, were moved to-day by an enema, and a very large quantity of feces was passed, after which she felt somewhat weak, and a little sore in the lower part of the abdomen.

7th. A.M. Pulse 90; temp. 99°. P.M. 90; temp. 99.5°.

8th. A.M. Pulse 85; temp. 99°. P.M. Pulse 90; temp. 99.2°. The patient has had a natural passage from the bowels; sleeps all night; has a fair appetite; can turn over on her side, and is feeling stronger.

11th. Pulse and temperature normal. The patient was taken out of bed and sat up in a reclining chair for a couple of hours. The quinine was discontinued, and two two-grain iodide of iron pills ordered three times a day.

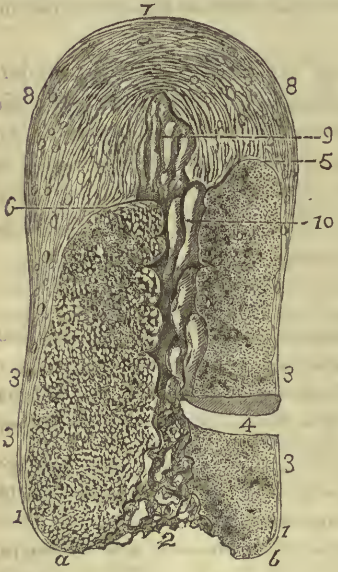
17th. Pulse and temperature normal. The patient is up and around all day long, and gaining strength rapidly. When she walks, a little urine passes through the vagina, keeping her clothing wet all the time. At night there will be no passage of urine for about two hours, then the desire for micturition will set in suddenly, and before she can get the bed-pan, part of the urine will pass through the vagina. There is very little discharge through the drainage-tubes, which were removed. The nurse was instructed to wash out the vagina morning and night.

24th. The patient is up and around the house all day, and is feeling stronger every day. She states that she is feeling better than for the past five or six months, her anæmic condition is disappearing, and some color is returning to her cheeks. The vesico-vaginal fistula is closed, so that she has no discharge through the vagina at night. During the day she is obliged to urinate about every three hours, but all of the urine passes through the urethra. The desire to urinate still comes on suddenly, and if she does not respond quickly, some of the urine will be passed through the urethra.

On examination of the vagina with a speculum, it was seen that on the left side was a perfect linear cicatrix, but on the right side, two of the ligatures around the broad ligament were still adherent, and offered so much resistance to the forceps that they were allowed to remain *in sitû* a little longer. Lower down in the vagina were five pedunculated polypi, one centimetre long and half a centimetre in breadth, which remained as reminiscences of the irrigating apparatus as above mentioned.

Examination of the Extirpated Uterus showed the following: The whole organ was four and one-half inches long, the cavity four inches long. The cervix was considerably enlarged, being about two inches in diameter; the thickness of the wall at this place was more than three-quarters of an inch. The external os and the whole of the cervical canal presented an irregularly ulcerated surface, and the thickened wall was seen to consist of white carcinomatus tissue. The body was enlarged, two and one-half inches broad, one inch and three-quarters in antero-posterior diameter, and six inches and three-quarters in circumference. The anterior wall was one inch thick, the posterior wall three-quarters of an inch. The whole of the lower half of the cavity of the body was filled by an irregularly nodulated cancerous mass, covered with hypertrophied mucous membrane, as shown at 10, in figure 1. The cancerous mass infiltrated the wall of the body as high up as the tumour of the cavity extended, namely, involving the entire lower half of the anterior wall, and extending higher on the posterior wall, so as to involve the lower two-thirds of the latter.

Fig. 1.



ANTERO-POSTERIOR SECTION THROUGH THE EXTIRPATED UTERUS.—1. Vaginal portion; *a*, anterior lip; *b*, posterior lip. 2. Ulcerated external os. 3. Cervix uteri. 4. Cut through the neck, through which digital exploration revealed irregular cancerous masses in the cavity of the fundus. 5. Limit of cancer in the posterior wall of the fundus. 6. Limit of cancer in the anterior wall. 7. Fundus of the uterus. 8. Healthy wall of the somewhat enlarged fundus uteri. 9. Dilated upper half of the cavity of the fundus uteri. 10. Globular cancerous vegetations in the mucous membrane of the lower half of the cavity of the fundus uteri.

Microscopical Examination of the Tumour showed the following: A section from the centre of the infiltrated wall showed a stroma of connective tissue and organic muscular fibres infiltrated with numerous young lymphoid or connective-tissue cells. The stroma inclosed very large and irregular-shaped cavities, some of which were lined with cylindrical cells, and filled with large, multiform, epithelial cells; others had no regular lining of cylindrical cells, but contained large epithelial cells, mostly irregular in shape, but some of which approached the cylindrical type, and others the pavement-cell type.

A section from the upper border of the tumour showed the large carcinomatous alveoli, defined by a rather sharp line, above which the uterine tissue showed the normal structure of organic muscular fibres, connective tissue, and vessels, not infiltrated with any proliferation of young cells.

Sections made at various points on the cut surfaces of the lateral ligaments showed neither alveoli with epithelial cells, nor infiltration with leucocytes or young connective-tissue cells.

Consequently, the character of the tumour was found to be the following: An epithelial carcinoma of mixed cylindrical-celled and pavement-celled types, leaning rather towards the character of the typical so-called epitheliomas, than to medullary carcinomas. The sharp line of definition upward pointed to a relatively local, hence relatively benignant character of the growth. The cylindrical cells in the alveoli and the extension of the carcinoma high up in the cavity of the corpus showed its origin to have taken place in the mucous membrane of the cervix uteri. The absence of carcinomatous matter in the broad ligaments gave some reason for the hope that the whole of the carcinomatous tissue had been removed, which, taken in connection with the relatively benignant character of the tumour, led to the belief and hope that the reappearance of the tumour, either here, or in the neighbouring lymph glands, might be deferred for a period corresponding to the good results obtained from the extirpation of epithelial carcinomas in other parts of the body, as, for instance, the lips and rectum.

As this operation is one of the latest of the steps forward in modern surgery, and cannot as yet be considered the common property of the profession, because it has not yet passed out of periodical literature, not even so far as into any monograph, I shall try, as far as the material at my command will permit me, to review the subject, considering, first: The indications for the operation; second, the operation itself; third, the after-treatment; fourth and finally, the results.

I. *Indications for the Operation.*

Malignant growths of the uterus have thus far been the only indications for the vaginal extirpation of that organ. Comparing the statistics of the abdominal with those of the vaginal operation, it is safe to say that whenever the total removal of the organ is indicated and this can be done through the vagina, that is, when the body of the organ is not enlarged to a very considerable extent, the latter method is preferable to the operation by abdominal section, for the following reasons:—

(a) *The shock*, which we know to be a capital danger in any protracted operation combined with laparotomy, is so much less in the vaginal extirpation that Schröder has been generally acknowledged to be correct in his statement that a woman after the total extirpation of the uterus through the vagina resembles rather a puerpera after a considerable post-partum hemorrhage, than a patient who has just experienced a very severe operation.

(b) *The ligation of the ureters*, and the accidental division of the ureters and opening of the bladder can be almost if not entirely avoided in the vaginal extirpation by sufficient skill and care in the operation; while this dangerous and often fatal complication is likely to, and in a number of cases has actually taken place during the abdominal operation, because the field of operation in this method is far from the surface; so far, indeed, that resection of the symphysis pubis has been proposed as a facilitating measure. Besides this, the separation of the organs in question from the uterus has to be effected in the dark, while in the vaginal extirpation this part of the field of operation is much more easily accessible.

(c) *The safe removal of all the carcinomatous tissue*, which, as most uterine carcinomas, originate in or near the vaginal portion, and sometimes appear as isolated nodules involving the vaginal mucous membrane in one or both lacunæ, can be effected with almost entire certainty through the vagina only, where the whole of the field of operation is open to view; while by the abdominal operation the removal of the vaginal portion is performed entirely in the dark, guided only by the digital touch.

The character of the malignant growth, which is to be extirpated through the vagina, will, as above stated, be most frequently a carcinoma, more rarely a sarcoma, and even more rarely, as in Czerny's case, an adenoma of the mucous membrane, originating in a fibro-myxo-myoma of the wall of the organ.

When one of these malignant growths has originated in the cervix and involves part of the fundus, or has originated in the fundus and extended from there to the neck, and the fundus is not enlarged above a size that will permit of a complete version of the organ through the anterior or posterior lacuna into the vagina, the operation is indicated. A large majority of uterine carcinomas commence in the vaginal portion and will, when operated upon in time, permit a radical extirpation of all the diseased tissue by means of an operation much less dangerous, supra-vaginal amputation of the cervix uteri. Consequently, the total extirpation through the vagina will be required in cases of these carcinomas, only when they have not been operated upon in time, that is, not until the carcinoma has extended above the internal os.

A uterine carcinoma seldom originates in the mucous membrane of the cervix. According to the laws of development of such carcinomas, the tumour will generally be a cylindrical-celled carcinoma, and this form of cancer will be apt to reach far up into the cavity of the fundus at an early stage of the disease, before any considerable enlargement or ulceration of the vaginal portion has taken place. Consequently, carcinomata originating in the mucous membrane of the cervix will indicate, almost from the beginning of the disease, the total extirpation of the uterus through the vagina.

It may be difficult in a number of cases to decide, even after most minute preliminary examination, whether a uterine carcinoma involving the vaginal portion and the cervix can be removed satisfactorily by supra-vaginal amputation alone, or by total extirpation of the organ. Practically the decision is only of slight importance, if we proceed in the following manner: Prepare for the total extirpation; commence the operation as if the removal of the cervix only were to be performed; then if it is discovered that all the diseased tissue cannot be removed by this procedure, proceed at once to the total extirpation. This plan of procedure does not involve any loss of time, either to the patient or to the operating surgeon, because supra-vaginal amputation is the first step in the total extirpation through the vagina.

The sarcomas, which originate much more frequently in the fundus than in the cervix, will undoubtedly, in most cases, before the operation can be considered, have enlarged the fundus to such an extent as to make the extirpation *per vaginam* impracticable, thus limiting their extirpation to one of the abdominal operations.

But if a sarcoma of the uterus can be diagnosed in time to permit the removal of the organ through the vagina, this operation would not only be preferable, but would also be likely to give most satisfactory results as to permanent cure, since we know that uterine sarcomas are much less liable to involve the broad ligaments than carcinomas.

In the more rare forms of malignant growths, such as adeno-fibromas or adeno-sarcomas, the total extirpation of the uterus through the vagina is to be considered in the beginning of the disease, when the hemorrhages and relapses cannot be controlled by any other operative procedure. But unfortunately most myxomas, fibro-myxomas, and fibro-myomas cause too great enlargement of the fundus before the operation can be considered, and consequently require total abdominal extirpation or abdominal amputation of the cervix. Adenomas also will generally permit of the removal of the involved tissues by scraping out with the sharp spoon, or by cauterization with the galvano-cautery. But still Czerny's case stands as an example of the possible indication of the operation in this variety of tumours.

As contra-indications to the total extirpation through the vagina, we may mention considerable involvement of the broad ligaments, bladder, or rectum by the cancer, and the palpable infiltration of the deep-seated lymph glands along the border of the pelvis minor, and finally very limited mobility of the uterus. If it is found on exploration that the uterus cannot be moved up and down almost as easily as when in its normal condition, but is attached to the walls of the pelvis minor, or to the organs situated behind it, the operation may have to be abandoned, because it is a *conditio sine qua non* for its practicability that the vaginal portion can be drawn down almost into the vulva, or very near to the end of the vagina. Too violent traction may cause rupture of adhesions or of the broad ligament, with subsequent hemorrhage from vessels situated so high up in the abdominal cavity as to be entirely inaccessible for surgical control through the vagina.

II. *The Operation.*

A few preparatory measures before the operation may be indicated. If the patient has a fetid carcinomatous ulcer of the vaginal portion, or of the external os, we naturally desire to have the mucous membrane of the vagina disinfected as far as possible before leaving this cavity in open communication with the pelvic cellular tissue, or even the peritoneal cavity. To this end it has been advised that the entire decayed wall of the cancerous ulcer be scraped out with the sharp spoon as a preparatory procedure, five to eight days before the operation; and then that the vagina be washed out two or three times daily with a two or three per cent. solution of carbolic acid. After each injection the vagina should be filled up with salicylated absorbent cotton to take up any fetid matter which may be excreted from the tumour. During this period it is advisable to give only liquid food to the patient, and to administer mild cathartics sufficient to produce daily alvine discharges, with a view of having the bowels empty at the time of the operation, that alvine discharges may not occur during the first week or two of the after-treatment.

Six reliable assistants are required in performing the extirpation. The patient is deeply anæsthetized and placed on a table, in the lithotomy position. Good light (I should always prefer sunlight) upon the field of operation is very necessary. The vagina is first washed out with a five per cent. solution of carbolic acid; the hairs on the mons veneris and perineum carefully shaved off, and the skin around the vulva cleaned and disinfected by means of soap, nail-brush, and three to five per cent. solution of carbolic acid. The spray is not employed, as it is unnecessary and troublesome; but the field of the operation is constantly irrigated by a two to three per cent. solution of carbolic acid, either by an irrigator, or, what I consider preferable, by disinfected sponges.

An assistant on each side holds a femur of the patient, and also a Simon's speculum for dilatation of the vulva. The blade of the speculum should be a little longer than usual; that is, two and one-half to three inches instead of the ordinary length, two inches, and somewhat concave laterally, so as to fit against the pubic arch, with a view to the dilatation of the vagina to its utmost extent.

If the entrance to the vagina should be too narrow, as may be the case in nulliparæ, the perineum should be divided in the median line. This wound may, at the close of the operation, be united by a simple perineorrhaphy.

If it is discovered later in the operation that any part of the vagina is too narrow, it may be enlarged with a knife in the lateral regions, so that the bladder and rectum may not be accidentally opened.

The vagina having thus been sufficiently dilated by means of Simon's specula held against the anterior and posterior wall, the vaginal portion of the uterus is now seized by a strong vulsellum forceps, and drawn down as far as possible toward the vulva. In the majority of cases, the cancerous tissue which is seized by the forceps is so soft and friable that the forceps will tear through when the necessary traction is applied to the organ. To obviate this difficulty Billroth has devised a strong vulsellum forceps, having four instead of two hooks at the end of each branch. The only additional change in this instrument that I suggest, is that these hooks be flattened instead of cylindrical, so that the friable tissue may be more firmly held.

The vaginal portion having thus been drawn down towards the vulva, Mikulicz advises that a heavy silk ligature be passed through each lateral portion of the fornix of the vagina, close to the cervix, and within the area of the tissue to be extirpated. From experiments on the cadaver, I was unable to see how these loops could facilitate the drawing down of the organ, as I invariably found that on exercising any traction upon them, the mucous membrane and soft tissues around the cervix would alone be drawn down, the cervix not yielding. Schröder does not make use of these loops, but handles the organ with the vulsellum forceps alone.

The next step in the operation is to make a circular incision through the mucous membrane of the fornix of the vagina around the lower end of the cervix. It is needless to state that this incision must be made about one centimetre distant from any visible carcinomatous infiltrated portion of the mucous membrane of the vaginal portion. The loose sub-mucous, cellular tissue should be separated from the infiltrated cervix by means of blunt instruments, such as the handle of the scalpel or the closed curved scissors, that is, with the instrument which has been used to make the incision. I prefer for this purpose the curved scissors, such as are generally used in plastic vaginal operations. When this dissection has been made, the uterus will yield more readily to the traction of the vulsellum forceps. It is now advisable to pass two loops of heavy silk through the middle or upper portion of the cervix, by means of which the latter may be drawn down and handled more easily.

On the lateral sides of the cervix, the connective tissue forming the lower borders of the lateral ligaments is firm and resistant, and will require the knife or scissors for its division. We must here expect to meet with bleeding vessels which will have to be ligated separately. To avoid unnecessary hemorrhage it is well to act upon Czerny's suggestion, and place an assistant on the left or right side of the patient, to make digital compression of the abdominal aorta, whenever needed during the operation.

The dissection of the cervix being finished, the uterus can be drawn further down, usually enough to allow of the palpation with the finger of the lower portion of the fundus uteri.

At this period of the operation it must be decided whether the supravaginal amputation or the total extirpation of the uterus shall be performed. A double heavy silk thread is passed through the lower portion of the fundus, looped, and taken to the side to be used later in handling the fundus. Mikulicz knots this loop and uses it as a hæmostatic during the amputation of the cervix. I prefer, however, not to use this ligature, as I can then judge better of the condition of the parts after the amputation. An incision is now made through the cervix into the uterine canal, or still better, the entire cervix is removed. The uterine canal is explored by the finger, in order to ascertain if, and how far, the cancerous infiltration has involved the mucous membrane of the fundus. By means of this exploration and the examination just referred to, we will be able to decide whether supra-vaginal amputation will enable us to remove the whole amount of cancerous tissue, and if so, to complete the operation at this point in the usual manner by uniting the cut surfaces of the mucous membrane. If, however, the whole of the cancerous tissue cannot be removed by this procedure, the next step in the total extirpation of the organ must be made, namely :—

The Opening into the Peritoneal Cavity. (a) *Opening of the Anterior Cul-de-sac.*—Here we will have to use extreme care to avoid the opening of the bladder. In some cases this dissection is very easy ; in others, very difficult. By the loop mentioned above, the fundus of the uterus is drawn downwards and backwards toward the anus, and the loose connective tissue between the bladder and the uterus separated by blunt instruments. If in making this separation we keep too close to the fundus, we run the risk of dissecting into the tissue of its wall, in which case all of the diseased tissue may not be removed ; and, on the other hand, if we keep away from the fundus uteri and close to the bladder, we may penetrate the posterior wall of the latter, which, if its wall is not diseased, should by all means be avoided. As an aid, at this stage of the operation, Mikulicz has made a very rational proposition, namely, to introduce a catheter or urethral sound with short curve through the urethra into the bladder, to turn the point forward, so as to push the cervix of the bladder out into the vagina, thereby making the posterior wall of the bladder tense, and at the same time lifting it up and away from the anterior wall of the uterus, which has been drawn backwards and downwards.

When dissecting with the organs in this position, the accidental opening into the bladder will be avoided, and, finally, we will reach the peritoneum, through which, in the median line, a little opening is made, and through this opening a finger is introduced into the vesico-uterine fossa. Using the finger as a guide, the opening in the peritoneum is now dilated outwards on both sides, keeping close to the uterus, until the anterior surface of the broad ligaments is reached.

By holding the bladder and uterus in the positions just described, there is little or no danger of cutting into the ureters, as they will be from one to two centimetres out of the field of operation. As to the opening of the bladder, there are cases in which the cancer has extended into its muscular coat, or even through this and into the mucous membrane. As it is a law in the removal of cancerous tumours to remove all the diseased tissue, irrespective of the organs met with, except as far as actual and immediate danger to life is concerned, we may proceed (as in my case) to the opening, in some cases necessarily extensive, of the bladder. Schröder does not hesitate, when necessary, to recommend the deliberate performance of this complication to the operation, and my case shows that this can be accomplished without any danger to the patient when the vesical wound is carefully closed, and the after-treatment conducted with reference to this complication. I shall return later on to the further consideration of this point.

(b) *The Opening of the Posterior Cul-de-sac.*—When the uterus has been drawn upward toward the symphysis pubis, one or two fingers should be introduced through the anterior cul-de-sac, hooked around the fundus, and passed down into Douglas's cul-de-sac, and the opening of the latter easily effected on the point of the finger as a guide. The opening thus made is dilated outwards toward the lateral ligaments, in the same way as this was accomplished in the anterior cul-de-sac. In passing the fingers around the fundus we may sometimes meet with adhesions between the latter and the surrounding peritoneal walls. Such adhesions should be separated, if possible, by the finger nails, as close to the uterus as possible. Too firm, heavy, and extensive adhesions may necessitate the abandonment of the operation at this point (Martin), as too forcible traction would be liable to tear off large portions of the parietal peritoneum, torn vessels in which might cause hemorrhage into the peritoneal cavity at a point too high up to permit the bleeding vessels to be caught up and ligated from the vagina.

The fundus of the uterus is now adherent only by or suspended in the lateral ligaments; but before we can seize these, we will have to proceed with the next step in the operation:

The Eversion of the Fundus Uteri.—It is necessary to seize the fundus and draw it down into the vulva, before the lateral ligaments can be brought into the field of operation. The eversion may in many cases be accomplished by combined manipulation with the index finger of each hand, without any particular difficulty. But in some cases, when, for instance, the fundus is somewhat enlarged, or the lateral ligaments short and tense, it may prove a rather troublesome step in the operation. Sharp hooks or the vulsellum forceps, introduced through the vesico-uterine fossa, and seizing the fundus uteri, which has been pressed forward by the index finger of the left hand in Douglas's fossa, will usually be sufficient to bring the fundus down through the vesico-uterine fossa into the vagina. But in a number of cases the tissue of the fundus is soft, and these instruments will tear through. As the operation itself is so difficult, and the time occupied in its performance so great, any suggestions by which the duration of any of the steps of the operation may be shortened, and the operation facilitated should be accepted with gratitude.

Martin, who has several times met with difficulty in the eversion of the uterus, has devised[1] an instrument of about the shape and size of the urethral sound, the end of which is enlarged into an oblong, oval body, or as he describes it "pear-shaped." The circumference of the end is four centimetres, and the whole instrument thirty-three centimetres long. He pushes the pear-shaped end of this instrument into the uterine canal, holding the handle and shaft up against the symphysis pubis. On bringing the shaft down towards the rectum, the fundus uteri can be pushed upward against the concave surface of a Sims' speculum, and be made to slide out, far enough along this, to be seized in the anterior lacuna. A loop of heavy silk thread is now passed through the fundus, the ends knotted, so that by it the fundus may be drawn down, or moved in any desired direction during the next step of the operation:

The Separation of the Uterus from the Lateral Ligaments.—The main point to have in view during this stage of the operation is to effect perfect security for immediate, and especially for secondary, hemorrhage from the large vessels supplying the uterus. This may be effected in two ways: (*a*) By the separate ligation of every bleeding vessel as soon as opened (Czerny, Hofmeier); or (*b*) By ligating the lateral ligaments *en masse* (Billroth, Mikulicz, Schröder). The future must decide which of these methods is preferable; each of them has its decided advantages.

(a) *The gradual division and successive ligation of all vessels* is the most rational, on general surgical principles, and possesses the two following advantages: First, It permits us to inspect the entire cut surface of the ligaments, and ascertain if any cancerous tissue has been left *in sitû*. If this has been done, it permits us by means of blunt instruments, as for instance, two dissecting forceps, to excavate and remove any spots of cancerous tissue, cancerous infiltrated lymph ducts and lymph glands, as far as the exterior wall of the pelvis minor. This may be done with the same security and in exactly the same way in which the similar operation for the removal of cancerous lymph glands in the axilla, after the removal of a cancerous mammary gland, is performed. Second, It has the advantage of not leaving any part of the lateral ligament to slough, as does the ligature *en masse*, and consequently, there is no risk of leaving decomposing tissue in or inside of the peritoneal wound.

This procedure has the following disadvantages, which of course are identical with the advantages of the other method, namely, that it takes a longer time and is less secure, as regards the stopping of hemorrhage.

(b) *Ligature en masse.*—I feel inclined, with Billroth, Mikulicz, and Schröder, to consider the ligature *en masse*, as the safest and most easily accomplished. The way to proceed therewith is as follows: Pass a heavy silk thread round the entire ligament, and ligate as far out towards the lateral wall of the pelvis as possible. Insert just at the medial side of this ligature through the midst of the lateral ligament, a double heavy silk thread, by means of a pointed, curved, aneurism needle, and thus ligate the ligament in two portions. Leave one of the ends of these ligatures long enough to extend outside of the vagina. As the lateral ligaments are often rather voluminous, and the slipping of the ligatures would be a very undesirable accident, Billroth's avoidance of this by the following device is noteworthy. Before applying the ligatures around the lateral ligament, he seizes the latter, through its entire thickness, with a strong forceps having two long and narrow branches, made especially for this purpose, and closing the forceps forcibly, he makes by means of its branches a depression, furrow, or sulcus in the ligament, exactly the same effect as is produced in the pedicle of ovarian tumours by means of the common, temporary clamp. In this furrow he applies the ligature *en masse*, after the removal of the forceps. A second furrow is made for the double reserve ligature, in two portions.

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[1] Centralblatt für Gynäkologie, No. 5, 1881, p. 99.

When thus the lateral ligament is securely ligated, the long ends of the ligatures are run downward and outward, the uterus drawn inward toward the median line, and the central portion of the lateral ligament divided at about one centimetre from the ligature. For further security against hemorrhage the larger vessels met with may be ligated separately with catgut or silk.

One of the lateral ligaments having thus been divided, it is easy to draw the fundus uteri down into the vulva, and then not only explore with the finger but even inspect with the eye, the ovaries and the whole of the lateral ligaments. If any of these parts are involved with cancer or otherwise degenerated, the question of their removal naturally presents itself. As far as I know, this has not yet been performed successfully, but in cases of need, where the diseased parts in question are sufficiently movable to permit of their being brought down into the field of operation, ligatures can be passed around their peripheral attachments, and they themselves removed (Schröder). The second lateral ligament is easily ligated, in the same manner as above described, the uterus separated entirely, and taken out through the vulva.

Treatment of the Peritoneal and Vaginal Wounds.—It is as yet an open question whether the wound in the peritoneum shall be left open or carefully united. To me it seems decidedly the most rational procedure to unite the whole of the peritoneal wound as carefully as possible (Czerny, Martin). To this end, I proceed in the following manner:—

A heavy silk ligature is pushed in through the mucous membrane of the posterior lacuna, near the lateral corner of the vaginal wound; passed through the midst of the ligatured lateral ligament, just outside of the ligature, and brought out through the mucous membrane of the anterior lacuna. When this ligature is tied it serves to draw the peripheral end of the lateral ligaments down into the vagina, or at any rate into the vaginal wound, with a view of keeping the sloughing central portions of the lateral ligaments out of the peritoneal cavity.

After having carefully cleaned the prolapsing intestines with disinfected sponges, some of which are allowed to remain for a short time between the intestines and the upper part of Douglas's fossa, I take hold of the edges of the peritoneum with sharp hooks, draw them down and towards each other, and unite them carefully with fine sutures of disinfected silk, distant about one-half centimetre from each other, commencing in the median line so as to be hindered less by the prolapsing intestines, and continuing from this point outward on each side until the last suture is closed to or through the peritoneal surface of the lateral ligament, which had previously been drawn down.

If the bladder or rectum has been opened by accident or intention, these openings are carefully united by a sufficient number of fine silk sutures, taking care to have these passing through the muscular walls of these organs alone, and not involving the mucous membrane. All these sutures are cut off short and left in permanently.

Some operators (Billroth, Mikulicz, Schröder) do not unite the wound in the peritoneum. Schröder leaves it as it is and inserts a heavy drainage tube, terminating in a transverse portion, the ends of which rest upon the upper inner surface of the ligated lateral ligament. The vaginal portion of this tube is kept firmly in place by means of salicylated cotton wound round it.

Billroth and Mikulicz pass through the edges of both flaps of the peritoneal wound, silk threads, two or three on each side. These are knotted, and when traction is made upon them, draw the edges of the wound together so that it resembles the mouth of a tobacco pouch. The latter procedure of Billroth and Mikulicz is resorted to, not with a view of using drainage tubes, but rather with a view of employing permanent irrigation in all cases. To the external opening of their irrigator are attached the ends of all the silk threads both from the peritoneal wound and from the lateral ligaments. That this latter procedure does not present any absolute security against invasion of the peritoneal cavity by liquid or micrococci from the vagina is obvious, and in cases like my own, in which the bladder was opened, I should certainly trust nothing but a most minute closure of the peritoneal wound.

Before considering the after-treatment, I shall only say about the operation, that even under the most favourable circumstances it is a long and difficult one. The space that is left for the field of operation is small. The appliance of sutures and ligature of vessels has as a general rule to be done one or two inches internal to the vulva. The working space in the vagina may be increased somewhat by the use of a Simon's speculum, applied in each lateral wall of the cavity. No considerable hemorrhage has been reported in any of the cases on record, still the compression of the abdominal aorta may, in case of need, be of great value.

In less favourable cases, in which, on account of adhesions or for some other reason, the uterus is not very movable; the walls of the vagina more rigid; the bladder or rectum opened; the operation certainly deserves, as Martin says, "to be classed as one of the most difficult operative procedures in abdominal surgery."

Possible Mishaps during the Operation.—We have already mentioned the opening of the bladder and rectum and shown that this may be sometimes necessary, so that these should not be counted among the mishaps, strictly speaking, and the treatment of such openings by careful union has been also mentioned.

The division of one or both of the ureters might be among the possibilities, though I do not know that it has happened in any of the cases on record. The only way to obviate the ill consequences of such a division, that is, evacuation of urine from the ureter into the peritoneal cavity, would be to seize the upper end of the divided ureter, pass a loop through its wall, draw it down into the vagina, and fix it there by means of sutures. When this is carried out effectually, I do not think that the mishap would necessarily endanger the patient's life, as the wound would heal up, and only a uretero-vaginal fistula would remain.

The involving of one of the ureters in the ligature *en masse* of the lateral ligament should, of course, be studiously avoided. If, however, the operator exercise due care, there is hardly any risk of this most dangerous, not to say fatal, complication.

The accidental opening of the intestines prolapsing from or tied down into the vesico-uterine or Douglas's fossæ by old adhesions is within the more remote possibilities. Undesirable as such an accident would be, it might not be necessarily fatal if a perfect union with catgut, or better, fine aseptic silk sutures is carefully effected, according to the well-known laws for operations upon the intestines.

Hemorrhage from torn vessels situated too high up in the pelvic cavity to permit of effective ligature may, as above stated, prove fatal, but this, we are happy to say, is rarely met with.

III. *After-Treatment.*

The main and predominant question in the after-treatment is the question of drainage, combined or, we might say, identical with that form of the antiseptic method or antiseptic precautions which will prove the most effectual in keeping inflammation or infection away from the wound, and the surrounding tissues and cavities. In considering this question, we must take into account the merits and demerits of drainage tubes and the washing out of the vagina through these, on the one hand, and permanent irrigation on the other.

(a) *Drainage Tubes.* — A heavy drainage tube with a transverse T-shaped portion resting in the ununited peritoneal and vaginal wound, and retained in position by salicylated cotton wound around it, is employed by Schröder. He makes injections of disinfectant solutions only when rise in temperature or fetid smell of the discharges calls for it. His brilliant success with this operation is a strong argument in favour of his method of treatment, in spite of any *à priori* objections that might be made about not uniting the peritoneal wound and the infrequent washing out of the drainage tube. Martin makes use of drainage tubes only for the drainage of the vaginal wound, as he recommends a careful union of the peritoneal wound.

The use of drainage-tubes has the great advantage that it incommodes the patient very little in the after-treatment as compared with the permanent irrigator. But it is still an open question whether sufficient disinfection can always be effected by them in cases where the bladder or rectum has been opened. In one of Czerny's cases, in which the bladder was opened, the peritoneal wound was united, drainage-tubes inserted, and the patient recovered. In Billroth's case, No. 4, in which the bladder was opened, and united by sutures, and the patient died from septic peritonitis thirty hours after the operation, drainage-tubes were employed in the ununited peritoneal wound according to Schröder's method.

(b) *Constant Irrigation.*—Two fatal cases of Billroth's, in which peritonitis occurred notwithstanding the use of drainage-tubes, led Mikulicz to consider permanent irrigation as a method permitting more perfect disinfection, and thereby promising the avoidance of fatal septic inflammations; namely, septic peritonitis and phlegmonous inflammation of the cellular tissue of the pelvis.

In some of the fatal cases in which drainage of the peritoneal cavity had been employed, the post-mortem examination showed that this drainage had been frustrated by the pliable walls of the intestines and still more mobile and pliable omentum which had occluded the openings in the drainage-tubes, above which large accumulations of septic fluid had formed. On this account Mikulicz came to the conclusion that it was impossible by any method known up to the present time to make effective drainage of the peritoneal cavity. From an *à priori* pathologico-anatomical point of view, I shall most certainly agree with him in this respect; but there is always some dissension between *à priori* reasonings and facts, as the statistics have shown that Bardenheuer's drainage through the vagina is a valuable factor in making Freund's operation, that is, the abdominal method of total extirpation of the uterus, considerably less fatal.

It occurred to me that permanent irrigation would be the safest method in my case, in which the bladder had been opened, and I consequently used a permanent irrigator, made exactly after the pattern of Mikulicz's, as shown in the cut in his above-mentioned paper.[1]

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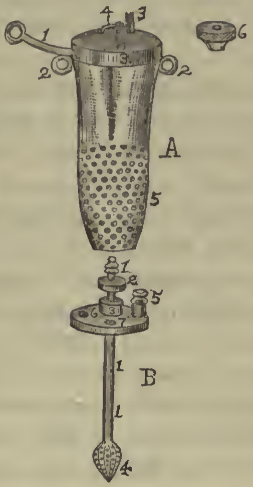
[1] Wiener Medizinische Wochenschrift, No. 4, 1881, p. 96.

As I found in the course of the after-treatment some inconveniences of minor importance attendant upon the use of Mikulicz's irrigator, I shall here, for the sake of brevity, describe the modified instrument I propose to use. As shown in Fig. 2, it consists of a cylindrical vaginal speculum, the central end of which is compressed and flattened so as to terminate not in a circular but in an oval opening, the transverse diameter of which is the longer, and of the same length as the diameter of the tube. The internal half of the speculum is perforated by a large number of small holes cut close to one another. Mikulicz's irrigator has a small number of large holes, through which the œdematous mucous membrane of the vagina protruded a few days after the operation, forming polypi, which not only made every movement of the instrument painful, but made its removal extremely difficult. At the outer end of this speculum, at its upper and lower aspect, in the median line, are rings through which bands are passed, which are attached to a cincture around the abdomen, for the purpose of retaining the instrument in position. At the free border of the speculum are two small hooks, for the attachment of the long ends of the ligatures around the broad ligaments. To the upper external border of the speculum is attached a small handle, which steadies the speculum and tends to keep it immobile while the cover is being removed or replaced. A water-tight cover is fitted accurately to the outer end of the speculum. Through the centre of this cover passes the metallic afferent tube, terminating in a bulb having numerous small perforations. Below the afferent tube is a short efferent tube, which originates in the cover. To each of these tubes rubber tubing is attached; that of the afferent tube communicating with a vessel half a metre above the level of the vagina, containing the irrigat-

Fig. 2.



VAGINAL IRRIGATOR (half of natural size).—A. SPECULUM, *lateral view*.—1. Handle, through the ring of which any cylindrical body, for instance, a vaginal dressing forceps, can be pushed for getting a firm hold. 2, 2. Rings for the bands for attachment of the apparatus to abdominal cincture. 3. Lateral screws to fasten the cover. 4. Small spring for attachment of long ends of ligatures around the broad ligaments. 5. Small holes through the internal half of speculum. 6. Nuts.

B. COVER.—1. Afferent tube with 2. Screw. 3. Stopcock, and 4. Terminal bulb with small openings. 5. Efferent tube. 6. Openings for overflow tube. 7. Hole for lateral screw.

Note.—The cover does not fit tightly to the speculum, but is made air tight by means of rubber washers.

ing fluid; that of the efferent tube discharging into a vessel placed on the floor by the bed-side. The irrigating fluid passes down through the afferent tube, out through the holes in the speculum, irrigates the wound, fills up the speculum, and passes out through the efferent tube. To avoid any undue pressure upon the wound from too sudden an influx of fluid, or by the occlusion of the efferent tube by clots of blood or the débris of eliminated tissue, there is a hole in the cover above the afferent tube, through which the fluid may pass out when the speculum is entirely filled.

The disinfecting fluid used for permanent irrigation has been in all the cases on record, two of Billroth's and my own, a one-tenth of one per cent. solution of thymol. But there is no reason why a solution of salicylic acid, such as Volkmann makes use of after extirpations of the rectum, or of boracic acid might not be employed with as good results. Constant irrigation with a solution of carbolic acid cannot be recommended, even as an experiment, as it might prove dangerous by its absorption and the consequent carbolic acid poisoning.

In the afferent rubber tube, between the reservoir and the vaginal irrigator, it is well to have a stop-cock so as to regulate the influx of the irrigating fluid, which should be a rapid succession of drops and not a constant stream, as this would cause an unnecessary and inconvenient waste of the fluid, necessitating the too frequent refilling of the reservoir and consequent inconvenience to the nurse.

As Billroth, Mikulicz, and I applied the irrigator, we had to contend with several inconveniences, which should be avoided in the future. These inconveniences are the following: The patient was obliged to lie the whole time on a rubber bed-pan, because the whole amount of irrigating fluid was not carried away through the efferent tube, but some of it escaped through the reserve opening above the afferent tube and some of it passed out between the speculum and the vulva. Notwithstanding very careful nursing, and the intermittent emptying of the fluid in the bed-pan, it happened to us and always will happen, especially during the night, that the bed-pan overflowed and the whole of the bed got wet. As the bed and night clothing of the patient cannot conveniently be changed more than once or twice in the twenty-four hours, especially during the first days after the operation, the wetting of the sheets and the whole back of the patient was unavoidable. The consequence of this was acute eczemas on the back, accompanied by an itching which soon became very uncomfortable to the patient, causing not only loss of sleep, but also in all probability a slight rise in temperature. I think that these inconveniences may be avoided by using a bed-pan having an efferent tube, by means of which the bed-pan may be kept empty all the time.

But there is still another point. For some patients, mine for instance, it is inconvenient to remain all the time on a rubber bed-pan, when this is placed on the mattress, because the bed-pan being on a higher level than the mattress surrounding it exercises an augmented pressure on the part of the sacrum that rests upon it, a pressure sufficient to cause, even in favourable cases, small superficial bed-sores, accompanied by considerable pain. I shall therefore, in future cases, have the bed-pan for permanent use situated in a fitting depression of the mattress, so as to make the upper surface of the bed-pan on a level with the latter. By precautions such as these just mentioned, I think it will be possible to keep the bed dry during the permanent irrigation.

The temperature of the irrigating fluid should be, as a rule, the temperature of the blood. In my own case the patient wished at times to have the fluid cooler. This request was attended to, and it appeared to relieve the pain in the wound.

As to the duration of the permanent irrigation: it has always been employed for about a week, within which time the peritoneal wound will be satisfactorily closed, and the vaginal wound granulating, so as to make the occurrence of any later absorption of septic matter impossible, and so as to render further constant irrigation unnecessary.

The cover of the vaginal irrigator should be removed three times a day for the removal of clots and portions of tissue sloughed off from the ligated lateral ligaments, and for the cleansing of the afferent and efferent tubes with five per cent. solution of carbolic acid. As any movement of the irrigator will cause the patient pain and consequently make her nervous before and after the removal of the cover, I have added, as mentioned above, a handle to Mikulicz's speculum, to make it possible to remove the cover without moving the vaginal tube in the least. The central end of Mikulicz's irrigator is cylindrical and cut off obliquely. For this oblique termination there is no use after the uterus has been removed, and the cylindrical end of the tube should rather be a transverse oval, because the wound in the peritoneum will always be transverse.

After having considered the advantages and disadvantages of the two methods of drainage and disinfection described above, I shall state as my opinion that I shall employ in future cases either of these methods, their use being based upon the following considerations: In common, uncomplicated cases, in which neither the bladder nor rectum has been opened, and in which there is no specific cause to fear septic inflammation, I shall make use of drainage-tubes, as Schröder does, but, of course, only for the vaginal wound, as I shall invariably insist upon the immediate uniting of the peritoneal wound.

In cases in which the bladder or rectum has been opened, I shall invariably employ constant irrigation, because we can never be sure, even after the most careful closure of openings into these organs, that the wounds will unite by first intention. We know from a number of cases on record in which openings in the intestines have been united with sutures, that escape of some fecal matter has frequently taken place, for a short time, even in favourable cases. We know, further, that, after the *sectio alta* of the bladder, when performed with the most strenuous antiseptic precautions, in most cases a small quantity of urine escapes through the wound for a short time, followed by spontaneous closure of the small openings in the wound which had not united by first intention. Exactly the same imperfect union of the wound in the bladder by first intention occurred in my case, as has been shown in the history. The small fistula closed spontaneously in a little more than four weeks after the operation.

With these facts in view, it seems to me natural in such cases not to trust to drainage-tubes, with only periodical removal of the fluids and substances in and around the wound, but rather that constant irrigation is the only rational way to effect the removal of any urinary or fecal matter.

The opening of the bladder renders necessary certain especial measures, besides the treatment already mentioned. The main feature is the retention of a permanent catheter in the bladder. Without going too fully into details, I shall simply state that I have found the use of a soft elastic rubber catheter to be the most convenient. In the avoidance of irritation and subsequent cystitis by this procedure, I consider the following factors of great value: First: The washing out of the bladder once or twice daily with a lukewarm saturated solution of boracic acid. Second: The end of the catheter terminating directly or indirectly through a tube in a vessel filled with five per cent. solution of carbolic acid; by means of which only disinfected air can come in contact with the column of urine from the bladder. By careful attention to these precautions, I have been enabled in this as well as in other operations, perineal section, for example, to retain the permanent catheter in the bladder for more than two weeks without causing any irritation sufficient to necessitate its removal. Where the urethra is healthy, as in cases of extirpation of the uterus, I remove the catheter twice a day, in order to cleanse it by the use of five per cent. carbolic acid solution.

A permanent tube in the rectum, a large, soft rubber tube, with several holes cut in the sides, is of great help in the facilitation of the passage of the intestinal gases. It is needless to say that any accumulation of the latter, in cases of abdominal operations, causes great pain to the patient, which is speedily relieved by their escape. This tube should be taken out and cleaned every one or two days, as the mucous matter of the rectum becomes very tenacious, and will adhere to the tube and occlude the holes if not frequently removed.

As to passages from the bowels. It is natural that we desire to keep the bowels perfectly quiet until the peritoneal wound is entirely united. In common, uncomplicated cases, the bowels have been moved a week after the operation without inconvenience. In my own case I did not dare or wish to have the bowels moved until very late in the after-treatment, on account of the opening into the bladder, with a view of not disturbing the healing of the latter if it could be avoided. As the history shows, I had no difficulty in postponing the movement of the bowels until even sixteen days after the operation, notwithstanding that the patient took considerable liquid food during the whole of the time, and, toward the latter part, even small quantities of solid food.

As for the medical treatment after the operation, I have very little to say in addition to what is already known from other abdominal operations. To keep the patient free from pain and restlessness I use hypodermic injections of one-sixth to one-fourth of a grain of morphia; moderate doses of quinia when a rise in temperature occurs; camphor and opium pills for the tenesmus and pain in the bladder; sub-nitrate of bismuth, with or without morphia, for pain in the cardiac region; and iced champagne and bits of ice for nausea.

The ligatures around the lateral ligaments will generally loosen and come off in the course of two or three weeks; sometimes one or more of them will remain for five or six weeks, as happened on one side in my own case. Inconveniences of this kind we may desire to avoid, and consequently, in cases in which the lateral ligaments are long enough, we should avoid the ligature *en masse* entirely. Local granulating nodules, especially in the lateral portions of the wound, may remain for a considerable time after operation. These may easily be made to heal by superficial cauterization with nitrate of silver, tincture of iodine, or similar agents.

If the course of the after-treatment is favourable, the patient will be able to be out of bed in three weeks, and up and around the house in four or five weeks. It is needless to state that during the convalescence, iron, wine, and food of the most nourishing character, should be given to those patients who are anæmic from constant loss of blood for months previous to operation; under this treatment the patients will gain strength rapidly.

IV. *Results and Remarks.*

We must naturally ask ourselves: Does suffering humanity gain anything by this operation? or, in other words: Does the operation enable us to save, or only to prolong life, and is it worth while for patients having uterine cancer to undergo this severe operation?

By total extirpation of the uterus, we desire to gain something more than the mere cessation of fetor and hemorrhage from the vagina, because we can obtain this by partial and very much less dangerous operations. We want to obtain perfect recovery if possible, or, at any rate, health for some years, to compensate for the serious operation.

In making a total extirpation of the uterus for cancer, we have the right to expect nothing more and nothing less than from the extirpation of cancer in other portions of the body. The immunity of the patient from a relapse of the cancer depends partly upon the anatomico-physiological characteristics of the malignant growth, and partly upon the successful removal of all the diseased tissue by the operation. From the statistics of the cases operated upon, we learn that in about fifty per cent. of the cases, relapse of the cancer set in *in loco* within a few months after the operation, and in regard to the remainder, the successful operations, the period since the operations had been too short to admit of our learning anything about definite cure. We do not need to be reminded, however, that the removal of malignant tumours in almost any part of the body except the ovaries is, and has always been, regarded as a procedure which the surgeon undertakes rather as a kind of traditional duty, than from any hope of thereby gaining for the patient radical cure, or even, in all cases, a longer lease of healthy life.

The prospects for patients operated upon for cancer we have always considered very gloomy. We did not know the exact numerical expression of what benefit we might expect to derive from the extirpation of cancers, until the recent statistics of Winiwarter, from the material of Billroth, at Vienna; Oldekop, from Esmarch's material at Kiel, and Henry, from Fischer's material at Berlin, threw some light upon the subject. The extirpation of cancers of the mammary gland gave a permanent cure in nine per cent. of the cases. The statistics of twenty-nine cases of cancer of the tongue, pharynx, and rectum, reported by Kocher, gave thirty-one per cent. of radical cures.

Mikulicz is certainly right in expressing the hope, or rather the justifiable expectation, that modern surgery will enable us to ameliorate the statistics of the radical treatment of cancer, for the following reasons: We have now the right, aided by antiseptic surgery, to operate much more extensively; to have, I may say, no apprehensions as to the size, location, and extent of the wound inflicted, within the limits for operations on vital organs, established by anatomy and physiology, the transgression of which would cause immediate death. In other words, we need not care how near we come to vessels or nerves or the intestines, because we need be no longer afraid of endangering our patients' lives by secondary inflammations in such important organs, since it is in our power to prevent any and all such complications by sufficient skill and care.

We may consequently, in operating for cancer, do justice to one of the imperative conditions recognized from the olden time to be all-important, namely, the removal of every particle of diseased tissue, and expect in years to come to have a much larger proportion of permanent cures after the extirpation of cancers.

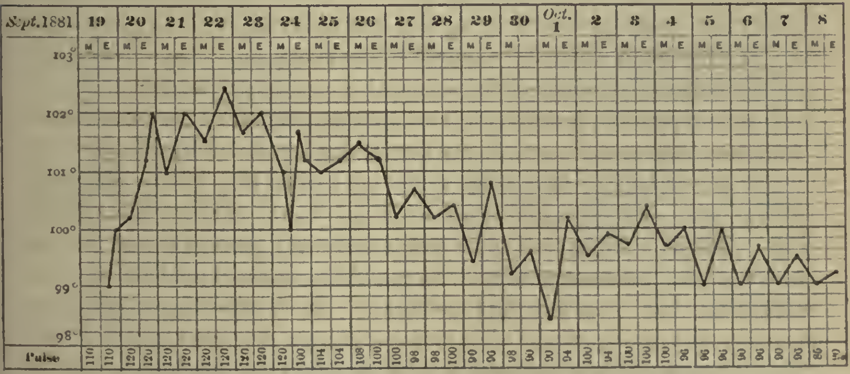
Now let us see how this applies to the total extirpation of the uterus through the vagina. If this operation were, or might be in the future made as safe as ovariotomy now is in the hands of the best operators, or, as might not unreasonably be expected, almost as safe as the supra-vaginal amputation, we might then be justified in preferring the former to the latter method, for the more effectual removal of all the diseased tissue.

The vaginal extirpation, for instance, enables us to remove the spread nodules and infiltrated lymph glands from the broad ligaments and the pelvic cellular tissue. But the operation has not yet reached such a degree of perfection and consequent safety, that we are justified in substituting it for the less dangerous supra-vaginal amputation, and so much the more as the latter counts among its results some cases of permanent recovery, besides the numerous cases in which the patient's condition was sufficiently ameliorated to give her a longer period of happy existence in her family, enabling her, for a time, to resume domestic duties.

On the other hand, the material existing, and the results so far obtained, have won for this operation a higher position than that accorded to it by John Erichsen, in his address before the Surgical Section of the International Medical Congress,[1] in which he chooses to designate such operations as "surgical triumphs or operative audacities, applied to the diagnosis or cure of diseases, in which but little of ultimate advantage, and, certainly, much of immediate peril may be expected from operative interference."

In natural science, we have no right to expect anything good or bad, without asking nature the right questions in the right terms. What the final answer to the question asked regarding the vaginal extirpation of the uterus for the cure of cancer will be, we do not know. But with sufficient skill and in careful hands this operation does not involve an amount of unavoidable danger considerable enough to prevent us from being justified in resorting to it when indicated in a disease which we know to be necessarily fatal, and with full confidence in our ability to make the method of operation still more perfect, and so lessen its dangers—a result which can be obtained, not by sterile *à priori* reasonings as to the right of its existence, but only by an earnest and impartial trial.

The accompanying chart shows the temperature curve in my case (see page 19).



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[1] Lancet, No. 6, vol. ii. 1881, p. 227.

Article II.

Removal of Uterine Appendages for the Arrest of Uterine Hemorrhage.

By Lawson Tait, F.R.C.S., Surgeon to the Birmingham and Midland Hospital for Women, etc., Birmingham, England.

It is to be expected that any new proposal in surgery will meet with a keener and more careful scrutiny the more exact our professional methods of argument become, and it is right that every method of testing new proceedings should be employed, and most of all the statistical method. The introduction of this is of very recent date, and had it been employed earlier, there are many operations, still in occasional use, which would long since have received complete professional condemnation.

No operation had so hard a battle to fight as ovariotomy, and it certainly would not yet have received complete acceptance but for the application to it of a careful statistical method by Mr. Spencer Wells. The greatest difficulty with it arose chiefly from sentiment, due to the facts that its objects were women, and that its relations were purely sexual. It was only when it was finally shown that its results could be compared favourably with those of every other major operation in surgery that the opposition was broken down.

The successful removal of ovarian tumours of necessity led to further efforts in abdominal surgery, and recent publications have shown that immense advances are yet possible in this department, but if these advances are to be made, those who are venturesome enough to make the first efforts must have something like fair play, and their results must be heard and carefully weighed before their work is condemned. I now desire to lay my experience upon one particular departure of a new kind in complete detail before the profession in order that I may obtain from their decision a guide for the future for myself and others. I must apologize for the prolixity of my communication by saying, that each case must be given more fully in detail than would be required if the operations I have to describe were already ranked amongst the accepted proceedings of surgery. I may save some repetition, however, by stating, that, after very protracted trials of all the drugs which have to my knowledge been used for the arrest of uterine hemorrhage, I have come to the conclusion that all are absolutely without effect save ergot and two salts of potash, the chlorate and the bromide. These, however, are by no means uniformly successful, and they do not often give permanent relief. In all of the cases I am about to relate these drugs had been fully and ineffectually used either by others or by myself before the question of any operation was discussed, and I do not think it worth while in any case to give in detail the infinite varieties of drug treatment which these patients were otherwise subjected to.

The cases are thirty-one in number, and in four of them the operations had fatal results, and they include every case where I have operated for hemorrhage. In the cases which have recovered from the operations, that is those in which there was primary success, the secondary results have been somewhat various, but only in one have they been unsatisfactory, and the explanation of this is that I operated for hemorrhage due probably to malignant disease, a mistake sure to occur occasionally in the most experienced hands. Even in this case, however, I procured the patient three months of relief from the hemorrhage.

I have entitled my paper "On Removal of the Uterine Appendages," because my experience seems to me to point very clearly to the conclusion that mere removal of the ovaries is not a certain method of arresting menstruation, whilst removal of the tubes as well as the ovaries seems to be so. This latter point, however, is one requiring further evidence, though I think we may fully accept the other part of my statement.

CASE I.—E. R., aged 41, the mother of four children, consulted me in June, 1873, on account of profuse menorrhagia, which had been in existence for fourteen months, was becoming rapidly more serious, and had reduced her to a condition of marked anæmia. On examination, I found that the uterus was normal in size and pushed over to the left side, but that it was associated with a tumour about the size of a cocoa-nut, which was evidently cystic, and, from its attachment to the uterus, was probably ovarian. I placed her upon a treatment consisting of large doses, fifteen grains, of bromide of potassium, with ergotin, one grain, in order to check the hemorrhage. For this purpose, I also applied astringent and caustic applications to the interior of the uterus, but all to no effect. The menorrhagia continued quite as profuse till September; and then, as it became perfectly evident that something more must be done, I resolved to remove the tumour. This I did on September 9, 1873. I made the usual median incision, and, when the tumour was displayed, I found that it was an ovarian cyst on the right side, with no very well-defined pedicle, and with a number of very large sinuses in its walls. I tapped it, and removed it from the pelvis, drawing it well out, and then I applied a circular clamp as close to the uterus as I could. A small mass of secondary cysts was pulled above the clamp with great difficulty, and the clamp was fastened really round a part of the cyst. The patient did remarkably well after the operation. On the seventh day, the clamp began to separate, and then it became evident that the part of the cyst cavity which remained was suppurating, and it discharged large quantities of pus. On the twelfth day, the clamp came off. For about a month after the operation, the cavity discharged freely, but then the opening began to close, and the patient suffered much pain. I, therefore, passed a double drainage tube through the cavity, and left it there about six weeks. I then removed it, and the whole track closed in a few days, and the patient remains to this day permanently well. Ever since the operation, her menstruation has been perfectly regular, and normal in quantity, and now (April, 1881) she is in robust health.

The only explanation of this curious case upon which I can venture is, that the metrorrhagia must have been due to the large venous sinuses which I found in the tumour. One or more of these probably ran through the corner of the uterus, and thus contributed a supply of blood larger than usual. That the removal of the tumour, leading to the destruction of these sinuses, cured the metrorrhagia, strongly supports my hypothesis.

CASE II.—Of the first case in which I removed *both* ovaries on account of uterine hemorrhage I can, unfortunately, give only a brief outline from memory, as the notes of the case have been lost, and I have nothing left save the record of the operation, which was performed on May 22, 1873. The patient, E. C., aged 40, was placed under my care by Mr. Giles, of Stourbridge, with a myoma about the size of a child's head, and from which she had for a long time had profuse monthly hemorrhages. I removed both ovaries, tying the pedicles, and the patient made an easy and rapid recovery. Menstruation did not occur after the operation, and the last I heard of the patient was that she was living in Cheltenham, in 1876, in robust health.

CASE III.—E. T., aged 41, single, was sent to me by Dr. Raper, in April, 1873, an account of extreme anæmia, the result of profuse menorrhagia. She presented an appearance as if every drop of blood had left her face. She had noticed a lump in the lower part of the abdomen for some months, and during her menstrual periods this lump was the seat of severe pain. When examined, this was found to be a tumour reaching almost up to the umbilicus, free, movable from above, soft but not fluctuating, and attached undoubtedly to the uterus. This organ was high up, and somewhat behind, the tumour, and to the right side.

The nature of the tumour was not clear, but I placed in my note-book an alternative diagnosis of a soft pedicellated uterine myoma, or an ovarian cyst with thick contents. I determined to remove the tumour.

On May 22d she was placed under the influence of methylene ether by Dr. Raper, and I was further assisted by Dr. James R. Chadwick, of Boston, U. S. A., and Mr. W. J. Foster. I made an incision four inches in length, and displayed a tumour of bright, pearly lustre, but having a curious purple hue, such as I had not previously seen. To the touch, it had a most singularly heavy and doughy feeling, and, when punctured by the trocar, nothing passed through the tube. I, therefore, made an incision into the cyst, and squeezed out a quantity of dark purple stuff of a putty-like consistence. I was thus able to draw the tumour out through the wound, and, finding that it had a well-marked pedicle, I secured it by a clamp, and finished the operation in the usual way. The other ovary was perfectly healthy, as was also the uterus.

The patient recovered from the operation without any trouble, and has since remained quite well, though she has never menstruated, and has suffered from the usual climacteric distress. When I came to examine the cyst and its contents, I found that the latter consisted entirely of inspissated blood, and the source of that blood was evidently a large ulcerating surface, which existed on the inner wall of the cyst. I think it very likely that the cyst originally contained the ordinary albuminous fluid found in such cavities; but that when this ulceration occurred, the walls of the Graafian capillaries gave way, especially, perhaps, at the menstrual periods, and hemorrhage into the cyst occurred. In the intermenstrual period, it is likely that absorption of the liquor sanguinis occurred, and thus the peculiar putty-like contents of the cyst were manufactured. This, of course, does not explain the occurrence of the uterine hemorrhage; and upon this matter I am unable even to speculate. There can be no doubt that the tumour was directly the cause of the hemorrhage, because it ceased absolutely upon its removal, but it is impossible to see how hemorrhage into a cyst should involve hemorrhage from the uterus.

CASE IV.—This was a patient of Messrs. Horsfall and Whiteley, of Wakefield, whose ovaries I removed upon the 25th of December, 1873, on account of uncontrollable hemorrhage from a myoma, about the size of the fœtal head. The patient was extremely anæmic. I divided the broad ligaments by the cautery, the patient had no efficient nurse and insisted upon getting up to the stool next day, and in the act of defecation, died. No post-mortem was made, but I have little doubt that she died of hemorrhage, for in subsequent cases I have found it wholly impossible to arrest the bleeding securely in such an operation by the cautery, and have satisfied myself that in the ligature alone there is safety.

CASE V.—This was a case operated upon in the Hospital for Women, on March 14, 1874, for hemorrhage from a small myoma. The patient died of septic peritonitis on the fourth day.

Discouraged by the deaths of two out of these three cases, I did not repeat this operation till 1879, and in the mean time tried a variety of operations, as enucleation and hysterotomy, for these cases of bleeding myoma. My results of these proceedings (already published) have, however been so bad, that I have determined to do no more of them, for they appear to me to be wholly unjustifiable. I was encouraged to resume the operation of removing the ovaries by an increasing success in my operations for the removal of ovarian tumours due to the re-introduction of the intraperitoneal method of operating by Dr. Keith, to increased personal experience, and to the arrangement of a more healthy hospital. Since 1879 I have performed this operation twenty-six times with two deaths, or a mortality of 7.7 per cent.

CASE VI.—E. F., aged 21, sent to me in January, 1879, by Dr. Meredith, of Wellington, in Somersetshire, on account of intractable menorrhagia of a very profuse kind. The girl was extremely anæmic, and after each menstruation was greatly exhausted. The history she gave was that the periods began when she was fifteen, and were regular and of normal amount till 1877, when they became excessive. The periods often lasted for nearly three weeks, in fact were nearly continuous. Every kind of drug treatment had failed. On examination I found the uterus nearly normal in size and position, but the ovaries were large and very tender. I fully dilated and explored the uterus on January 20th, but found nothing. I applied solid nitrate of silver all over its interior, and this was repeated at intervals seven times during her residence in the hospital. The other treatment consisted of complete rest in bed and the administration of large doses of bromide of potassium and ergot. She had three periods during her residence with us, and returned to Wellington on March 1st. When at home, however, her condition speedily got worse again, and in spite of Dr. Meredith continuing the treatment, including the intra-uterine applications, she rapidly became worse, and returned to us in August to have the ovaries removed. This decision was arrived at after much correspondence between myself and Dr. Meredith with the full knowledge on the part of the patient and of the friends, as to what it was we proposed, and all its possible consequences, and also after full consultation with my colleagues on the hospital staff.

The operation was performed on August 8, 1879, at the Hospital for Women, in the presence of Dr. Annie Barker, Dr. Agnes McLaren, Dr. Savage, Dr. Adginton, and Mr. Raffles Harmar, my assistant. Ether was given by Dr. Annie E. Clark. A median incision, four inches in extent, was made; the ovaries were found adherent to surrounding structures, were studded with small cysts, and were covered with flakes of recent lymph. A good deal of care had to be exercised in separating them. The tubes were adherent to them, and were removed with them, the pedicles being secured in the way I have described (*Brit. Med. Journal*) under the name of the "Staffordshire Knot." I have used that knot now 161 times, without having in a single instance found it to fail. She recovered from the operation without trouble of any kind, a very slight show occurring on the 16th and 17th. She left the hospital on August 31st. She has never menstruated since, and I exhibited her at a meeting of the Somersetshire branch of the British Medical Association in August, 1880, when she was in perfect health, could walk any distance, and suffered no kind of discomfort, the climacteric symptoms having entirely disappeared. She remains up to the time of writing, twenty-one months after the operation, in perfect health.

Of this case I can only say that all concerned in it are quite satisfied that but for the operation the girl would have lost her life from hemorrhage. Whether the hemorrhage depended upon the cystic condition of the ovaries, upon the perioöphoritis, or upon the inflammation of the tubes, I do not know, but on account of the evidence of other cases I am inclined to attribute it to the cystic disease of the ovaries.

CASE VII.—This case was placed under my care by Dr. Larkin, of Bilston, and was operated upon August 28, 1879, and was then in a condition of the most extreme spanæmia from profuse and protracted menorrhagia due to a large myoma. Within a few hours after the operation she became breathless, and died in thirty hours of suffocation, due to the formation of heart clot. This deposit was found to extend from the point of ligature up to the heart, and to occupy all the chambers. In the publication of the case already made I have expressed my regret at having undertaken the operation under circumstances almost devoid of hope, and I certainly would not repeat the attempt in such a case.

CASE VIII.—This case was under the joint care of Dr. Wellersley Tomkins, of Leamington, and Dr. Crowe, of Worcester. She had had one child, twenty-three years ago, and had suffered from menorrhagia for about ten years. For five years the losses had been profuse. I saw her for the first time in February, 1878, and recognized the presence of a multiple myoma. Treatment by drugs was persevered in till October, 1879, when it became evident that something more certain must be undertaken, and I recommended removal of the ovaries. This was performed on October 18, 1879, in the presence of her attendants, and with the assistance of Mr. Raffles Harmar I removed both ovaries and both tubes. The ovaries were cystic and the tubes so related to them that they had to be removed to get a good pedicle. Dr. Tomkins's report of the progress of the case is that "she progressed without pain or drawback of any kind till fourteen days after the operation when, unfortunately, having been lifted on to the sofa, for the purpose of having her bed made, in the absence of her nurse, she incautiously stood up on the cold floor for a few minutes, with the result of being attacked with severe pain in the left iliac region two hours afterwards, extending down the course of the vein." This turned out to be an attack of phlebitis, which materially protracted her convalescence. Dr. Tomkins wrote, on the 20th of November, "Her condition to-day is eminently satisfactory. She is quite free from pain, eats heartily, and sleeps well, looks cheerful and happy, quite different from the haggard and careworn appearance she has presented for years. The left leg is rapidly regaining its shape and proper proportions." On May 18, 1880, I saw her with Dr. Tomkins at Leamington, and found her in perfect health. She had had no return of menstruation, and suffered only slight inconvenience from her leg, and now she is quite a robust woman.

CASE IX.—This lady was the widow of a very well-known member of our profession, and she was placed under my care by his two sons, who are both widely known in the Midland district, and for every step of the treatment of her case I had their complete sanction and most earnest assistance (Drs. J. H. and E. Tylecote, of London). In December, 1876, I discovered a myoma to be the cause of an intractable menorrhagia, which had entirely destroyed her health and reduced her to a condition of extreme anæmia. We used a great variety of methods of treatment without avail, including a prolonged use of ergotin administered hypodermically; the use of strong astringents and escharotics into the uterus, and finally (in April, 1879) the free division of the cervix. Her age (52) induced us to defer any further step under the hope that the natural process would affect an arrest of the hemorrhage, but it did not; so that in November, 1879, when she was so terribly reduced that all chance of success seemed gone, and so hopeless did the prospect of the climacteric become, that I proposed removal of the ovaries almost against my own conviction. This operation I performed on November 30, 1879. She made a somewhat difficult and tedious recovery. In February, 1880, she had greatly recovered her strength, the hemorrhage having been completely arrested though certain faint indications of menstruation had occurred. In this case the tubes were not interfered with. On the anniversary of her operation, 1880, she wrote to me that she had occasional and only slight shows, but that she was "in perfect health; was leading a very busy life." On May 22, 1880, she wrote, "I am a marvel to myself and others, to find myself again with old friends, and able to do pretty much as others do. It seems as though one was taking a new lease of life." Occasional but very slight menstruations still occur, but she is in perfectly robust health, and the tumours have almost disappeared. A few weeks ago she wrote to me that she was anxious to undertake the charge of an important hospital work in which she had been engaged up to 1875, when her hemorrhage obliged her to give it up.

CASE X.—This was a hospital patient, had been married nine years, and had never been pregnant. Her menstruation had always been regular, but six years ago it began to get excessive, and the amount of loss was steadily increasing. Her periods lasted quite a fortnight, and during the whole time she suffered excessive pain. She had been under the care of a number of doctors, including two well-known gynæcologists, without obtaining any relief. A tumour was observed in Nov. 1878, and until Jan. 1880, she took bromide of potash and ergot almost uninterruptedly, but without benefit; indeed she became rapidly more anæmic. I therefore determined to remove the ovaries, and this I did on Jan. 13, 1880. Both ovaries were cystic, and there was no possibility of removing them without the tubes. The myoma was as large as an ostrich egg. She recovered without interruption, and left the hospital on Feb. 13th, greatly improved in health. In July, 1880, she had one slight show after a long railway journey, and has seen nothing since. She is now stout and of a ruddy complexion, has lost all the climacteric disturbance, and her tumour seems to be about one-third the size it was at the time of the operation.

CASE XI.—This was also a hospital patient. She had been quite regular until five years before I saw her, but since that time the periods had come on every fortnight and became gradually very profuse, so that for the last three months of 1879 it was practically continuous. She was extremely anæmic and worn down, and suffered great pain, and she had been under a number of doctors without getting any relief. I found a multiple myoma and advised the removal of the ovaries. This I performed on Jan. 17, 1880. I found the right ovary cystic (it is now in the College of Surgeons Museum), the left completely cirrhotic, and both tubes had to be removed to get proper pedicles. She made a rapid and easy recovery and left the hospital early in February. On March 3d I saw her and found her greatly recovered. She had gained flesh and colour and expressed herself as being better than she had been for years. She returned to Southport and remained perfectly well for about three months and then became ill and died. I have applied to the practitioner under whose care she died for particulars, but I am sorry to say I have not been able to get them. All I can learn is that the certificate of death had the entry of "Cancer of the Uterus," and the symptoms described by her friends correspond to this. The tumour at the time of the operation did not present any appearance of malignancy, as if being anything but an ordinary multiple myoma, about as large as a cocoa-nut. But it may have been malignant at that time. On the other hand it may have become malignant after the operation, though it can hardly be suspected that it did so as a result of the operation.

CASE XII.—This case was placed under my care by Mr. R. A. Newton, of Newhall Street, Birmingham, and in its results is one of the most brilliant I have ever experienced in the whole course of my practice, for the operation restored a woman, whose life was slowly being destroyed, to a condition of perfect activity and usefulness. Her menstruation began at the age of thirteen, always regular but very painful, and she never was able to sit up during her periods, being almost always confined to bed. She was married in 1876; and marriage greatly increased the severity of her sufferings. She became pregnant three months after marriage, and had a very long and severe illness after her confinement. Her second confinement took place early in 1878, and she had hardly been out of bed for the eleven months which elapsed between it and my first seeing her with Mr. Newton. My first visit to her was in May, 1879, and I found her with large, tender ovaries down behind the uterus, the fundus of which was retroverted and exquisitely tender to the touch. Her menstruation was extremely profuse, and she was very anæmic and suffering from hectic symptoms. Marital intercourse had always been painful to her, but since her last confinement she could not endure it at all. She had been under a great variety of treatments, from none of which had she been benefited in the least. No pressure could be endured. I did not see her again until January 6, 1880; and between my visits others had been consulted without result. When I saw her the second time I was fully persuaded, as was Mr. Newton, that she had not long to live if something could not be done to relieve her. I proposed to remove the diseased ovaries, and that was at once accepted by Mr. Newton and her friends—somewhat reluctantly by the former. I operated on February 9th, and found the ovaries greatly enlarged, adherent, and covered by recent lymph. I removed the tubes with them. She made a speedy recovery and has never menstruated since. In a few weeks she was able to walk with assistance, then she rapidly gained strength, and now (May, 1881) enjoys health, such as she has never known in her life before; strong, robust, and wholly free from pain. Further, she tells me, that, while previous to the operation, she never submitted to marital intercourse without dread, and from it never derived anything approaching pleasure; now she has altogether different sentiments regarding it and derives from and confers upon her husband perfect satisfaction. This fact is also established concerning many others of my cases, but it is not a matter concerned in this paper, and those who argue against removal of the ovaries on the ground that it unsexes a woman, are profoundly ignorant of the physiology of the female sexual organs.

Case XIII.—This patient was placed under my care in February, 1880, up to which time she had been under the care of Dr. Graily Hewitt. Her menstruation began at 12, and remained regular and comparatively free from pain till she was about 28. After that her periods gradually became more and more profuse till she was 36. Previous to my seeing her she had been wholly unable to walk for seven years, and had practically been confined to bed or to the couch for that period. She had been under many doctors, and for four years under one distinguished specialist without the least improvement. I found the uterus retroflected, the fundus enormously enlarged and spongy, and the ovaries lying down with it, both enormously enlarged. Everything had been already done which could be suggested, by drugs and pessaries, fruitlessly, and she had come prepared for removal of the ovaries. This operation seemed to me the only thing to be done, and the anæmic state she was in justified it for the arrest of the hemorrhage alone. I operated on her in February 20, 1880, and found both ovaries enormously enlarged and with them I removed the tubes. I also passed a stitch through the fundus of the uterus and fastened it up to the wound. She made a rapid recovery from the operation, and soon gained strength and colour, for she has never menstruated since. Her powers of locomotion, however, were slow to be re-established. She wrote me in October, 1880, eight months after the operation, that she could only drag herself along with sticks, and we almost gave up hope that she ever would mend in this way. In March, 1881, however, the long hoped for change came, and now, fifteen months after the operation, she can walk freely and without support, is free from pain, looks stout and well, and is in a condition of health as good as she was eleven years ago.

Case XIV.—This lady was sent to me by Mr. Calvert, of Southwell, for distressing pelvic pain, profuse menorrhagia, and pronounced anæmia. The periods occupied the greater part of the month, and were very profuse. Ergot had exercised no influence upon them. I found she had a multiple myoma, and from her age I was averse to operate, hoping that nature would help us in arresting the periods. I therefore kept her under observation for seven months, and it was only (as in Case IX.) when it became evident that there was risk in a longer delay, that I suggested the removal of the ovaries. To this her attendant, who was also a very near relative, at once consented and I operated on March 10, 1880. The ovaries were down behind the tumour and were very difficult to reach, and the tubes were removed with them. She made an uninterrupted recovery, and speedily gained flesh and colour. She has never menstruated since. I have seen her quite lately, and am perfectly satisfied with the results of the operation. The tumour has greatly diminished in size.

CASE XV.—In this case, brought to me by Dr. Clifton, of Leicester, the periods had been getting gradually profuse for about ten years. Of late, they had occupied the greater part of the month, she being rarely fourteen days clear. Sometimes there would be continuous loss for several weeks, and ergot and bromide had been fully tried without any perceptible effect. She was very anæmic, and had great difficulty in walking. I found, on examination under ether (she was unmarried), that there was a multiple myoma about as large as a cocoa-nut. I advised the removal of the ovaries. They were both cystic, and quite as large as a walnut. The tubes were also removed. She recovered rapidly from the operation, and has never menstruated since. She is now stout and ruddy, but she has suffered a good deal from the climacteric. She can walk well, and doubtless in a few months will be in perfect health. All these cases I ask to see me, or write to me, once a month for a period of two years after the operation. In the last letter of this patient, she says: "I shall probably not write again without there is something I want to consult you about."

CASE XVI.—The next case was that of a lady, aged thirty-three, placed under my care by Dr. Gibbs Blake, of Birmingham. She began to menstruate at thirteen, was married at twenty, and in eleven years had seven children. Her first child was born prematurely, and she had never been well since, for she got up and undertook a railway journey on the fourteenth day. After this she had continuous hemorrhage for several months. She had several premature and dead children after this, and then one living child and the seventh dead. Three years previous to my seeing her, she consulted a distinguished metropolitan specialist, who, upon his consulting-room couch, "did something to her which gave her immediately a violent pain in the back," and that pain she never lost for an hour, save when asleep or narcotized, till the day I operated upon her. What this was, which was done to her, of course I do not know, though I have little doubt it was the rectification of her remarkable retroversion by the sound. If it was, it is another example which we may quote against this mischievous practice. When I first saw her, I got the story that ever since this incident, the patient's life was a misery to her and her surroundings —that she could not get about—was on the couch all day long—her menstruation so protracted and profuse that it lasted quite half the month— and she had hardly recovered from the exhaustion consequent upon the loss and the increase of her suffering, when she was ill again. She had been under the hands of quite a number of specialists, both here and in London; and after reading her case up, and comparing the opinions expressed about it, and having come across one of my cases of spaying, she came to me deliberately to ask me if I thought I could spay her, and, if I could, if I thought it would do her good. She had been told that the womb was bent backwards, but that there was a tumour on either side of it. The tumour in question I found to be enormously enlarged and very tender ovaries lying behind and below a retroflected and retroverted fundus, which felt so large that it really might have been a question whether or not there was a myoma in it. From my previous experience, I was of opinion that fundal enlargement was due merely to chronic fundal metritis, though I was quite prepared to find a myoma at the operation. I had no difficulty in such a case as this in recommending the removal of the ovaries, for the mere names of the gentlemen under whose care she had previously been, without benefit, were sufficient guarantee that everything short of that had been tried. Moreover, the patient, a clever, intelligent woman, knew all about her case, and told me pretty accurately all that had been done. I had, besides, the advantage of the history given by one of her medical attendants. The immediate arrest of the hemorrhage, which had been uncontrolled even by hypodermic injection of ergotin, would alone have been a sufficient warrant for the ovariotomy, but there were numerous other reasons in its favour. I, therefore, performed it on April 9th, and found the fundus enlarged from chronic fundal metritis only, the ovaries enlarged from chronic interstitial inflammation, and the displacement as I have described it. I removed the ovaries and tubes, and then stitched the uterus up to the wound, as in Case XIII. She made an uninterrupted recovery. She had no sign of menstruation until a month ago (April 1st). Mr. Crompton saw her with me after that, and we found the uterus perfectly normal in position and quite small. As she has passed through the climacteric distress, I have no doubt that the return of menstruation will be only temporary, the more as it seemed to be completely under the control of ergot. She has gained flesh and colour, and but for a persistent pain in the back would be perfectly well.

CASE XVII.—This case was sent to me by Dr. Clarke, of Chasetown. She had had considerable loss at her periods for eight or nine years, these lasting always a week and often longer. She married in 1878, and has been very much worse since. In July, 1879, after riding some distance in a cart, she was attacked by violent pain in the abdomen and profuse hemorrhage, which continued, in spite of treatment, more or less for four months, and produced a condition of extreme anæmia. In November, the loss became intermittent, but remained very profuse, and resisted all treatment. I saw her early in 1880, and recognized a large uterine myoma. After-treatment by ergot continued till April without effect. I removed the ovaries in April, removing the tubes as well as the ovaries. She left the hospital on May 15th very much improved, and the report in November last was, "She is well and strong, quite a different woman. She has seen nothing since the operation, and the tumour is not half the size it was in April last." She still continues in good health, and there has been no appearance of menstruation.

CASE XVIII.—In this patient, who came to me from Dr. Imsull, of Solihull, menstruation had been scanty until a year before I saw her, since which time it has become so profuse as to have to all appearances almost drained her of blood. For two years a tumour had been known to exist, and this I recognized as a large myoma, reaching about two inches above the umbilicus. I admitted her to hospital, and with a great deal of hesitation opened the abdomen to remove the ovaries. I did not find them till I had made an incision nine inches long, and pulled the tumour, which was very nodular, completely outside. It had no pedicles, or I think I should have performed hysterotomy. Down in the pelvis behind the tumour I found the ovaries, which were cystic and very large, almost as large as a clenched fist. After removing the ovaries and tubes, I had very great difficulty in getting the tumour back into the abdominal cavity and the wound closed over it. She made a very rapid recovery, and has never lost a drop of blood since. She speedily gained flesh and colour, and about six months after the operation I exhibited her at a meeting of the

Birmingham Branch. The cicatrix of my nine inches was then only seven and a half inches long, and the tumour did not rise to its upper limit by nearly two inches, the size of the tumour being certainly less than half what it was at the time of the operation. She has suffered a good deal from climacteric distress, but when I saw her last (on April 21st) she was in very good health.

CASE XIX.—This patient, sent to me by Dr. C. H. Phillips, of Homley, had been married seventeen years, and had had only one child, two years after her marriage. After her confinement, she had had some pelvic illness, of which she gave no very clear account, but which I have no doubt was peri-oöphoritis. Her periods ever since have been too frequent and too profuse, indeed, she was seldom a fortnight clear. The pain at her periods was intense, and she was seldom free from pain. Her attendant, Dr. Phillips, of Homley, had sent her down several times to me, and I had tried a variety of methods of treatment without any benefit. The condition was that the uterus was retroverted, with a large tender mass on either side of it, which I supposed to be the ovary, but which the operation proved to be the distended Fallopian tube. I saw her first in Feb. 1880, and in July Dr. Phillips wrote: "She does not seem to me to be any better than she was before she came to Birmingham the first time. Since she last saw you, six weeks ago, she has been distracted with pain in her back, and also in the left iliac region, which I cannot relieve, even with strong doses of opium. She has also been unwell three times during the last six weeks, each time over six days, and is now only just recovering from what has been a severe attack of flooding." We, therefore, agreed to remove her ovaries, and this I did on August 3d. I found them large and cystic, strongly adherent to surrounding structures, so that I had to exercise great care in picking them out. The infundibulum of each tube was densely adherent to its ovary, and the tube was distended into a large cyst by yellow serous fluid. She made a very good recovery, and in a letter to me in September she wrote "I am very much better; I am thankful to say I have no pain like I had before the operation." For a long time before the operation she could not submit to marital intercourse at all. Now she can do so without any discomfort.

CASE XX.—In June, 1880, I was called by Dr. Collis, of Bridgnorth, to see with him, in consultation, a lady of very eminent social position, on account of persistent metrorrhagia. She was twenty-nine years of age. She had been married six years, and before that had suffered always more or less from a white discharge and irregular and profuse menstruation. Nine months after marriage she was confined of a still-born child, and nearly lost her life from hemorrhage. Two years after she had another child, living, and in the following year another child, both labours being characterized by unusual hemorrhage. In 1878 she had a miscarriage and was alarmingly ill from hemorrhage. In August, 1879, a third child was born about six weeks before the full time, when again the hemorrhage was extreme.

Dr. Collis favours me with the following notes of the progress of this most interesting case. He saw her first on May 31, 1880, when he was informed that up to a fortnight before his visit she had missed three menstrual periods, but that during the fortnight there had been a continuous flow. Neither she nor her husband thought it possible that she was pregnant. They regarded it as her usual profuse and protracted menstruation; but on examination Dr. Collis found the uterus enlarged. He kept her in bed and gave her astringents, and afterwards ergot and bromide of potash. Finally he had to plug the vagina, and then he telegraphed for me to see her with him. I saw her on the evening of June 13th, and found the patient very anæmic, and the uterus enlarged as if by a pregnancy of the third month. The cervix being closed it was clear that we must dilate, and for that purpose I introduced my instruments, which act by continuous elastic pressure. In a few hours dilation had proceeded so far that, after placing the patient under ether, I was able to empty the uterus of a large quantity of clot and some villous cysts. These, I presume, were remains of a chorion of which the villi had undergone cystic dilatation, but nothing in the shape of membranous or placental structure could be discovered. Recognizing the urgent necessity of there being no more hemorrhage, I took great pains to remove everything from the uterus, and I scraped the whole of the inner surface over with a curette. She had no further loss and made a good recovery till the 10th of July, when her period came on very profusely, lasted ten days, and left her very anæmic and exhausted. During the whole time she took large doses of bromide of potash and ergot, but with no apparent effect. Hemorrhage again occurred on July the 29th, by which time she had been removed to Malvern, where she was under the care of Drs. Pike and Weir. The hemorrhage was extreme, and everything was tried, including hypodermic injections of ergotin, without any avail. I was sent for on August 3d, and found the patient in the very last stage of anæmic exhaustion. I removed a plug which had been placed in the vagina, found the uterus perfectly small and normal, explored it with the alligator forceps but found nothing in it, and I applied solid nitrate of silver freely to the inside. This stopped the hemorrhage for about twenty hours, but after that it came on and I was sent for again on the 6th. At my visit on the 3d I had informed the husband that if the nitrate of silver did not check the hemorrhage I knew nothing short of a surgical operation which would, but I said nothing to him as to the nature of the operation I intended to perform. When telegraphed for on the 6th, I replied that I should bring my assistant and everything prepared to operate if it was thought desirable, and for this purpose my friend, Dr. J. W. Taylor, accompanied me to Malvern, in the absence of Mr. Raffles Harmar.

When I reached the house I met the husband, a man of distinguished position and great intelligence, at the door. He greeted me with the remark that he did not know what I proposed to do, that he left it entirely to me; but that he was perfectly sure the only thing which would give either temporary or permanent relief would be removal of the ovaries. As this was exactly my own notion, and was readily agreed to by my colleagues in the case, I at once proceeded to carry it out, my only fear being that we had delayed it too long. She was blanched beyond my powers of language to describe, and she had those swollen, waxy lips which are rarely restored to their original condition. There was no difficulty in the operation, and both ovaries were found to be cystic and about the size of Mandarin oranges. The uterus was perfectly normal in size and consistence when I had it between my fingers. The incision was only two and a half inches long, and its bleeding points were indicated by a flow of serum almost devoid of colour. For about an hour after the operation, I gave up almost all hope of her recovery. Dr. Pike and I were in almost constant attendance upon her for five days, during which she had some ups and downs, but finally she got right. She has had the usual flushes and other slight indications of the climacteric, but these are now completely worn off. In this case I did not remove the tubes, and on the 26th of March, 1881, they informed me that she had a slight period; this again occurred towards the end of April.

CASE XXI.—In this case, sent to me by Dr. Sutton, of Wednesbury, menstruation did not appear until she was nineteen. She was pretty well until marriage (at twenty-two), but she has never been well since. Menstruation speedily became irregular and very profuse, often lasting a fortnight, and she suffered intense pain during the whole time, the pain amounting to agony during the first three or four days, and large doses of opium were taken for its relief. She had never become pregnant, and married life was the source of such suffering that she had to decline it altogether. Dr. Sutton had treated her so well that it seemed to me useless to try over again all that he had found useless. I therefore advised removal of the ovaries, and this was performed on August 16, 1880. Both glands were adherent down in Douglas's pouch, and were removed with great difficulty. The tubes were adherent to the ovaries, and distended by about an ounce of purulent fluid. They were removed with the ovaries. She made a speedy recovery, and has not menstruated since. Dr. Sutton tells me she is in perfect health. I have not seen her since October, and then she told me that intercourse had been resumed satisfactorily.

CASE XXII.—This patient, placed under my care by Dr. Drummond, of Fosta Green, had been gradually getting large round the waist for eighteen months, and her periods during the same time had become excessive. A large myoma occupied the pelvis and lower abdomen, and had given rise repeatedly to retention of urine. I admitted her to hospital and removed both ovaries and tubes on August 17, 1880. She left the hospital well on September 5. I heard of her in January last as being perfectly well, but I have not seen her personally, and I have not been able to trace her since January.

CASE XXIII.—This patient had noticed for twelve months that her abdomen had been increasing in size, and her periods had become so excessive that her condition, when sent to me by Dr. Fenton, of Coventry, was one of advanced anæmia. She had a large myoma reaching almost to the umbilicus. I admitted her to hospital and removed both ovaries, which proved to be cystic. The tubes were not removed in this case, but the arrest of the hemorrhage, up to the time I last heard from her, was complete.

CASE XXIV.—This case was sent to me by Dr. Horton, of Chasetown, and was in some respects as remarkable as XX., though it is not necessary to occupy so much space with its detail. She was thirty-nine years of age, had been married at fourteen years of age, and was confined of her first child before she was sixteen, her second at seventeen, eight months after she had a miscarriage, and then for the next ten years had a baby every year. At each confinement the hemorrhage was very great, and two or three times she was supposed to be dying from this cause. As she had no menstruation for twelve years, being either always pregnant or suckling, she could tell nothing about this matter until she became a widow at twenty-eight. She married again about four years ago, and during her widowhood her menstruation had been far too frequent and too profuse, and she had been almost constantly in the doctor's hands on that account. Since her recent marriage she has had eight miscarriages in forty months, the first being at seven months, and the others between four and five. She was admitted into the hospital in February last, when pregnant at the third month. She was put upon chlorate of potash and biniodide of mercury, in order to avoid the repetition of the miscarriage, and she took every precaution to assist us in this, for both she and her husband were very anxious for a living child. In spite of everything, however, she miscarried at the fifth month, and as nearly as possible died from the hemorrhage. During May, June, and July, she had most profuse menstruation, in spite of a great variety of treatment; and when admitted into hospital again, she was a completely broken down, anæmic woman, whose desire was to die if nothing more could be done for her. In this case it did not occur to me to remove the ovaries, and that proposal originated with my colleague, Dr. Hickinbotham, at the consultation held on the case. I am bound to say I did not regard the idea with favour at first, and it was only after prolonged discussion with my colleague, and finally at the earnest and frequently repeated request of the patient herself, that I undertook it. This request was based on her knowledge derived from a patient in the same ward, who was recovering from the operation. Here again the ovaries were cystic, and the patient made a complete and rapid recovery. In this case I also removed both tubes. Though only a few months have passed since the operation, the woman's improvement is most manifest. I saw her lately and hardly recognized her. She has not had the appearance of menstruation since the operation.

Case XXV.—This case was brought to me by Dr. Somerville, of Bloxwich, in a condition of advanced anæmia. She had been married thirteen years, but had never been pregnant. Her periods came on after only ten or twelve days' interval, and were extremely profuse. Dr. Somerville had tried everything in vain, and I therefore advised removal of the ovaries, though I had some doubt as to whether the case was not too far advanced for the operation to be successful. I removed the ovaries on October 26, 1880, and found them both cystic. The tubes were also removed. She made a very protracted and anxious recovery, suffering from excessive night sweats and high temperature for six weeks, so that I feared she was likely to become tubercular. She went home on November 29th, and recovered slowly under Dr. Somerville's care. He informs me that there has been no return of the hemorrhage, and that his patient is doing well.

Case XXVI.—This case was placed under my care in November last, by Dr. Stephenson, of Bradninch. She was forty-two years of age, and for three years had suffered from pain and profuse menstruation. Two years before she noticed an increase in her size, and some months after that Dr. Stephenson recognized the presence of a tumour. The periods came on at intervals of only eight or ten days, and the loss was excessive, resisting all remedies. On Nov. 16, 1880, I opened the abdomen, and finding it impossible to remove the tumour I removed the ovaries. They were both cystic. She had no bad symptom till the fourth day, when the abdomen began to distend. Every effort to get the bowels to move was fruitless, the distension increased so as to threaten to tear open the wound, and I had to resort to puncture of the intestines to avoid this catastrophe. The temperature did not rise at all, and the pulse only when exhaustion set in. She died on the eighth day, and the post mortem revealed nothing but simple distension of the intestines, with a limited effusion of lymph in the neighbourhood of the wound, which was sloughy and gaping.

Case XXVII.—This patient was placed under my care by Dr. J. W. Taylor, of Birmingham. She had a myoma as large as a child's head, the symptoms of which had been present and progressing for three years. For nine months she had been under Dr. Taylor's care, and his treatment for its arrest had not been successful. He therefore placed her under my care for the purpose of removing the ovaries, which I did on December 18, 1880. They were very difficult to find, and were both cystic. I removed the tubes as well. She recovered rapidly. I have not seen her since, but Dr. Taylor tells me her progress is perfectly satisfactory, and there has been no more hemorrhage.

Case XXVIII.—In this patient, sent to me by Dr. Plowman, of Coventry, there was a pelvic tumour, the nature of which was not clear. The symptoms were urgent, and the patient very anæmic. I removed the ovaries on Jan. 13, 1881, and found them both cystic. I removed the tubes as well. She left the hospital on February 1st. A few days after leaving the hospital she became very ill, and in about a week I went over to Coventry to see her, and found that something had sloughed out of the uterus, probably a piece of the tumour. Even at the operation the nature of the growth was not clearly ascertained, though it seemed to be myoma of the anterior wall. She has made a good recovery, and menstruation so far is completely arrested.

Case XXIX.—This woman, recommended to me by Dr. Kenny, of Birmingham, had been married nineteen years, and had three children, the youngest being seven years of age. About eight years ago, her periods began to be profuse, and they have continued progressively so ever since. Marital intercourse or any excitement always brought on a flooding. She had wandered about from doctor to doctor, and had been in several hospitals without deriving any benefit. Dr. Kenny placed her under my care for the purpose of having the ovaries removed, on account of a large myoma which he had discovered. Amongst other treatment employed was that of Chian turpentine at the hands of its introducer, for a period of seven months, and without benefit. She was so feeble and so extremely anæmic, that I greatly feared I should have an unfortunate result. The operation was performed on Feb. 11, 1881. The tumour was as large as a cocoa-nut. The right ovary was a cystoma, almost as large, and the left ovary was also cystic, as large as a clenched fist. Both tubes were removed. The patient made an excellent recovery, and has lost no blood since.

Case XXX.—This patient is just completing her recovery from the operation, and, therefore, nothing can be said more than that the tumour was very large, the ovaries were very difficult to find, and were both cystic, and that the tubes were both removed. She is a near relative of her medical attendant, Dr. Sutton, of Durlaston, who has been associated with me through the case. Though it is only about six weeks since the operation, the tumour is much less than it was before, and one of the most distressing symptoms, retention of urine, is completely relieved.

Case XXXI.—A. W., 25, sent to me by Dr. Forty, of Wotten-under-Edge, with the following letter: "Do you remember a young woman named ——, who was under your care at the Birmingham Hospital for Women in June, 1879? She suffered then from painful and profuse menstruation. She is now in much the same condition as when she was under your care. The periods are frequent and very painful; the loss of blood excessive, and between each period there is a great deal of white discharge. She gets attacks of abdominal distension, and suffers a good deal of pain constantly. She can hardly move about the house even. After reading your account of cases of ovariotomy it struck me that this girl might be a case in which such an operation would be justifiable and successful. She is perfectly willing to undergo this or any other measure which would be likely to give her relief. She has been in the hands of several competent medical men, and all sorts of simpler means have been tried."

In the hospital notes I find that in 1874 I had dilated and explored this girl's uterus, and found nothing in it, that I had repeatedly rubbed the whole mucous surface with solid nitrate of silver and with nitric acid, and with no result. When she came back to me in February last, I found her very anæmic, quite unable to walk, and both ovaries large, tender, and fixed. I removed them with the tubes on March 2d, and found them both cystic, the left being adherent between the uterus and rectum, and as large as an orange. She made an easy recovery, and went home in the second week of May, much stronger, and almost free from pain, and able to walk fairly well.

No.	Age.	M. or S.	Disease.	Operation.	Date.	Hosp.	Private.	R.	D.	After result.	Remarks.
1	41	S.	Cystoma	Rem. left ov.	April 22, '73	..	P.	R.	..	Complete cure	
2	40	M.	Myoma	“ both “	May 22, '73	..	P.	R.	..	“ “	
3	41	M.	Cystoma	“ right “	Sept. 9, '73	..	P.	R.	..	“ “	
4	44	M.	Myoma	“ both “	Dec. 25, '73	..	P.	..	D.		
5	38	M.	Myoma	“ “ “	Mar. 14, '74	H	..	..	D.		
6	21	S.	Cystoma and peri-oöphoritis	“ “ “	Aug. 8, '79	H.	..	R.	..	Complete cure	
7*	41	S.	Myoma	“ “ “	Aug. 28, '79	..	P.	..	D.		
8*	47	M.	Myoma	“ “ “	Oct. 18, '79	..	P.	R.	..	Complete cure	Ovaries cystic.
9	52	M.	Myoma	“ “ “	Nov. 30, '79	..	P.	R.	..	“ “	
10*	34	M.	Myoma	“ “ “	Jan. 13, '80	H.	..	R.	..	“ “	“ “
11*	48	S.	Myoma?	“ “ “	Jan. 17, '80	H.	..	R.	..	Died of cancer	“ “
12	22	M.	Ovaritis	“ “ “	Feb. 9, '80	..	P.	R.	..	Complete cure	“ “
13	36	S.	Ovaritis	“ “ “	Feb. 26, '80	..	P.	R.	..	“ “	
14	52	S.	Myoma	“ “ “	Mar. 10, '80	..	P.	R.	..	“ “	
15	42	S.	Myoma	“ “ “	April 7 '80	..	P.	R.	..	“ “	‘ “
16	33	M.	Ovaritis	“ “ “	April 9, '80	..	P.	R.	..	Great improvement	
17*	39	M.	Myoma	“ “ “	April 22, '80	H.	..	R.	..	Complete cure	“ “
18*	46	S.	Myoma	“ “ “	May 8, '80	H.	..	R.	..	“ “	“ “
19	37	M.	Cysts of Fal. tubes	“ “ “	Aug. 3, '80	..	P.	R.	..	Great improvement	Ovaries cystic and tubes adherent.
20*	29	M.	Cystoma	“ “ “	Aug. 6, '80	..	P.	R.	..	Complete cure	Ovaries cystic.
21*	28	M.	Cirrhosis of ov.	“ “ “	Aug. 10, '80	H.	..	R.	..	“ “	Tubes adher'nt
22*	49	M.	Myoma	“ “ “	Aug. 17, '80	H.	..	R.	..	Great improvement	Cystic ovaries.
23	47	M.	Myoma	“ “ “	Sept. 1, '80	H.	..	R.	..	Compl'te arrest	Ovaries cystic.
24	39	M	Cystoma	“ “ “	Sept. 10, '80	H.	..	R.	..	“ “	
25	35	M.	Myoma	“ “ “	Oct. 26, '80	..	P.	R.	..	“ “	“ “
26*	42	M.	Myoma	“ “ “	Nov. 16, '80	H.	..	R.	D.		
27*	44	S.	Myoma	“ “ “	Dec. 18, '80	H.	..	R.	..	“ “	“ “
28*	32	M.	Myoma	“ “ “	Jan. 13, '81	H.	..	R.	..	“ “	
29*	43	M.	Myoma	“ “ “	Feb. 12, '81	H.	..	R.	..	“ “	“ “
30	34	S.	Myoma	“ “ “	April 20, '81	..	P.	R.			
31	25	S.	Cystoma	“ “ “	Mar. 2, '81	..	P.	R.	..	....	“ “

The thirteen cases marked (*) had the spray and other Listerean details used, and as they include one of the two deaths in the recent series (25 in number), it is clear that they have had no influence one way or the other in the results.

From these cases I think the following conclusions may legitimately be drawn:—

I. That as far as its primary results are concerned, removal of the uterine appendages for the arrest of intractable uterine hemorrhage, is an operation which is quite as easily justified as any of the major operations of surgery.

II. That so far as its secondary results are yet known, it is an operation which yields abundant encouragement for its further trial.

As conclusions which are indicated, but not wholly proved, I think I may formulate a statement that removal of the ovaries alone is not sufficient to arrest menstruation, but that removal of both tubes and ovaries does at once arrest it. So far as some of these cases have gone the arrest would seem to be permanent. This conclusion is quite in harmony with what is known of removal of both ovaries for large cystomata, for in such cases the tubes are almost uniformly included in the clamp or ligature, and menstruation is arrested.

Three at least of the cases, and probably two others, show that the arrest of menstruation by this means leads, or may lead, to the atrophy of the tumours.

Finally, there is some close connection, here pointed out I believe for the first time, and worthy of very clear study, between uterine myoma and its accompanying hemorrhages, and cystic disease of the ovaries. In two of the cases the cystic disease seemed to be the cause of the hemorrhage, without any myoma intervening.

Another conclusion is, I think, to be justified, that the whole subject is worthy of careful study, and should not be made the subject of premature and hostile conclusions.

ARTICLE III.

AN EXPERIMENTAL STUDY ON THE ACTION OF SALICYLIC ACID UPON BLOOD-CELLS AND UPON AMŒBOID MOVEMENTS AND EMIGRATION.

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IT was shown by the writer in a recent number of this JOURNAL, January 1881 (p. 82), that dilute carbolic acid possesses an inhibitory power over the amœboid movements and the capacity for emigration of the white blood-cells: and it was suggested as extremely probable, therefore, that a part of the favourable action of carbolic acid in the healing of wounds, at least in so far as the prevention of undue suppuration is concerned, is owing to the reduced activity of the white blood-cells. In view of this suggestive probability, for absolute proof is scarcely to be expected with our present facilities for investigation, it is evidently important to know whether the effects of other agents which exert a like favourable influence upon the healing process, can be partially or entirely accounted for on the same grounds. As one of the most important competitors for favour in antiseptic surgery salicylic acid is the first to suggest itself, and the purpose of the present article is to record a series of experiments with this agent similar to those just referred to with carbolic acid.

The methods used were essentially the same as those described in detail in the above-mentioned paper, and it will be necessary only to refer to them here, detaining the reader with little else than a brief account of the results. The experiments were largely made upon spring frogs of the species Rana clamitans,[1] but control experiments were made upon the blood of the rabbit and of man. The salicylic acid was dissolved in a half per cent. solution of sodium chloride, for the purpose of eliminating from the experiments, as much as might be, the action of water, by giving to the solutions a proper degree of concentration. It was used in solutions of the strength of 1–300; 1–500; 1–1000; 1–3000; 1–4000; 1–5000.

The first series of experiments upon frog's blood was made by irrigating, on a slide, the blood or mixed blood and lymph drawn from the toe.

Strong Solutions in Frog's Blood.—The effect of solutions of 1–500 and stronger, on both red and white blood-cells, is to cause rapid death of the cells and profound changes in the protoplasm. If such solutions are added to specimens in which the leucocytes are in active motion, as soon as it fairly comes in contact with them, all movement ceases at once, the cell processes are usually somewhat contracted and the cell body becomes more coarsely granular. The nucleus very soon becomes visible, then shrinks considerably, and presently the cell bodies appear to be broken up into larger and smaller irregular particles of strongly refractive material lying in a transparent matrix: the nuclei also undergo the same degeneration. After this no change occurs in the cells while they remain in the acid. Almost at the same instant that alterations are seen in the leucocytes changes commence in the red blood-cells. The first change observed is the rapidly increasing distinctness in the outline of the nucleus and of the intra-nuclear network, and sometimes hand in hand with this appears a slight irregularity in the contour of the cell. The observer must now be on the alert, for, sometimes almost faster than he can follow them, very marked changes occur in the cell body. At first an almost indefinable darkening of the body occurs, as if it were being suddenly shaded from the light below, this very rapidly deepens and merges into a mottling of the surface which usually, almost before it is defined, gives place to a distinct, shining, closemeshed, reddish-yellow network stretching from the nucleus to the periphery of the cell. A homogeneous, much less refractive substance lies in the meshes of the net. A similar, but coarser network is now seen in the shrunken nucleus. Sometimes this condition of the cells persists for a few seconds or minutes, or even hours or days, but more frequently, in the majority of cells, the observer is startled to see the entire body suddenly and symmetrically enlarge; the meshes of the new-formed network within the body spread out, the fibres becoming more slender, and often breaking away from the sides of the cell, and the whole becomes decolorized. The nucleus meanwhile may remain unchanged, looking however more distinct by contrast, or it may become shrunken, nearly homogeneous, and very strongly refractive. Sometimes upon the sudden enlargement of the cell the network in the body becomes so delicate as to be almost invisible, and it may altogether disappear.

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[1] I wish to correct an error which I committed in the paper above referred to, in calling the species of frog experimented upon with carbolic acid Rana esculenta: it was R. clamitans; the European species, R. esculenta, as I have been subsequently informed, not occurring in this country. This is a matter of no little importance, because, as is well known, there are considerable anatomical differences between different species of frogs, and also, as I have frequently observed, physiological peculiarities, in their power of resisting deleterious agencies, and in their reaction towards drugs, so marked as to make their recognition imperative in experimental studies.

The cells after this enlargement are still flattened ovoids, and about one-fifth larger than before. In some cases the change occurs so rapidly that the intermediate changes in the process are lost sight of or do not occur, and the enlarged cells, with their sharply defined nuclei and almost (sometimes quite) transparent colourless body, bounded by a delicate contour line, appear where but an instant before the eye of the observer was fixed upon a slightly mottled cell. Numerous slight departures from the above description may be observed, depending upon the directness with which the acid comes in contact with the cells, etc., but it is not necessary to describe them in detail here.

The network in the cell body, when its development is evident, may be readily stained with eosin and other colouring agents. It would seem most probable that its development is the result of the rapid disintegration of the protoplasm of the cell, perhaps a residuum of the stroma after the decomposition, or separation and discharge of the hæmoglobin, and not that it is a pre-formed structure analogous to the intracellular networks so freely described by certain authors. Somewhat similar appearances are produced in the cell by carbolic acid and other agents.

Strong Solutions on Mammalian Blood.—The action of salicylic acid, 1–500, upon the white blood-cells of the rabbit and of man is similar to that on the leucocytes of the frog, but the changes in the red cells are not as prominent as in those of the frog. There is at first the same mottling the cell and the formation of coarse, irregular, strongly refractive linear structures in or upon the cell, and then in almost all cases comes a sudden expansion and decoloration, and there is finally left a pale delicate spheroidal body which remains for a long time unchanged in the acid. Much less frequently at the instant that the agent touches the red cells, they enlarge and become globular, and the entire central portion is broken up into larger and smaller, often angular, strongly refractive particles which seem to float in a fluid within the unbroken contour of the cell. These little bodies immediately commence to dance to and fro within the cell, and at the same time to grow smaller; they rapidly decrease in size, dancing faster and faster as they do so until they entirely disappear, leaving a pale spheroidal body similar to the red cells after the action of water. Sometimes, before the particles within have disappeared, they are suddenly shot out of one side of the cell in a brush-like cluster, and immediately disappear in the surrounding fluid. The movements in the new formed particles resemble the Brownonian movements.

Dilute Solutions on Frog's Blood.—With solutions of the strength of 1–1000 to 1–4000, death of both kinds of cells occurs sooner or later, but without as marked, though similar, morphological changes in the protoplasm, as those produced by stronger solutions. In solutions of 1–4000 amœboid movements in the leucocytes may continue on the slide, with suitable precautions against concentration of the irrigating fluid, for several hours, but they are very slow from the first, and when they have once ceased cannot be reinstated by washing out with the indifferent salt solution, but the cells on the contrary rapidly disintegrate. The red blood-cells are affected by these dilute solutions apparently in the same way as by other dilute acids,[1] as acetic and hydrochloric, becoming at first slightly granular and then, often with a sudden jerk, swelling out and becoming decolorized, with shrinkage of the nucleus, and sometimes with the development of an irregular delicate fragmentary network within the cell-body.

Dilute Solutions on Mammalian Blood.—Solutions of 1–1000 to 1–4000 cause immediate cessation of amœboid movement in the leucocytes of man and the rabbit, when studied on the warm stage, and the nucleus soon becomes visible and the cell-body shrunken and coarsely granular. On the red blood-cells the effect is similar to that caused by other dilute acids; they rapidly swell, assuming a globular shape and become decolorized.

Action on the Circulation and Emigration.—This was studied in the bladder and mesentery of the living curarized frog; Thoma's frog-plate being used as in the former experiments.[2] The effects of solutions of varying strengths may be briefly summarized. Solutions of 1–500, and stronger, cause cloudiness of the tissue and a granular precipitate in the blood-serum; then permanent stasis occurs in all but the larger trunks, and usually in these too after a few moments. The arteries and veins may contract slightly at first, but they then dilate largely (especially the veins) as stasis occurs, and very soon the blood-cells within undergo the same changes as when they are treated with the acid on the slide.

With more dilute solutions, 1–1000 to 1–3000, stasis comes on less promptly, but very surely within a few minutes or hours, and is accompanied or followed by the same morphological changes in the blood-cells as are produced outside of the vessels.. With still more dilute solutions, 1–4000, the circulation may continue in vigorous animals for many hours; twenty-four to thirty-six and over,[1] with but slight cloudiness of the tissues, and no evident changes in the bloodvessels beyond the usual inflammatory dilatation; *but emigration either does not occur at all or only to a very slight extent.* The parietal fixture of the leucocytes, which occurs under simple salt solution, is but slightly marked or almost entirely absent from the first, the cells rolling along as usual in the peripheral zone, but remaining spheroidal, and exhibiting little tendency to stick and drag along the walls. If the part is at first irrigated with salt solution until emigration is well established and this is then replaced by the salicylic solution, emigration very soon ceases and the parietal fixture of the cells becomes less marked, while the cells which have already passed out and are free in the tissues soon cease their perigrinations. In no case was it found possible to cause a re-establishment of emigration after it had once been stopped by the acid; a difference between the action of salicylic and carbolic acid which would seem to be of considerable significance.

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[1] Kneuttinger, Zur Histologie des Blutes, Würzburg, 1865, p. 28. Stirling, Text-book of Practical Histology, 1881, p. 2.

[2] l. c., p. 86.

SUMMARY—*Frog.*—Salicylic acid in very dilute solutions, 1–4000, checks or entirely suppresses emigration of white blood-cells in the bladder and mesentery, without sensibly affecting the calibre of the bloodvessels or the general character of the circulation, or the structure of the blood-cells. It also retards amœboid movements both in the tissues and upon the slide. Somewhat stronger solutions, 1–1000, cause stasis in the bloodvessels, death of the white blood-cells, and swelling and decoloration of the red cells in a manner similar to other dilute acids. Solutions of 1–500 cause instantaneous stasis; death of the leucocytes with disintegration of the protoplasm; while in the red cells it produces immediate decomposition of the protoplasm with decoloration and a separation into morphologically distinct elements, which may remain permanent in the acid, or undergo subsequent changes.

Man and Rabbit.—Dilute solutions, 1–1000 to 1–4000, cause cessation of amœboid movement in the leucocytes, with death of the cell and disintegration of the protoplasm, and in the red cells swelling and decoloration. Strong solutions, 1–500, cause instantaneous death of both kinds of cells, with marked morphological degenerative changes.

Remarks.—It will be seen by a comparison of the above results with those obtained in the experiments on carbolic acid that the latter is less inimical, in solutions of the same percentage strength, to the life and functions of the blood-cells than is salicylic acid. For neither upon the slide nor in the bloodvessels or the tissues can the movement of the leucocytes be re-established when they have been brought to rest by salicylic acid, and the morphological changes produced by it are much more prompt and marked. It does not of course follow from these experiments that the action of salicylic acid in restraining emigration is peculiar to it in virtue of any properties other than those which it possesses in common with such dilute acids as acetic and hydrochloric, for these also in dilute solution are capable of restraining emigration, although with the exhibition of somewhat different phenomena. It is sufficient for the purposes of this paper to have shown experimentally, *that salicylic acid does restrain emigration, and is inimical in strong solutions to the life, and in dilute solutions to the activity of the white blood-cells;* and to suggest, as was done in the case of carbolic acid, the probability that some of its favourable effects, when applied as a surgical dressing, are due to its direct action upon the living white blood-cells.

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[1] It should be remembered that emigration often commences in the bladder within a very short time after exposure of the part, sometimes within an hour.

Literature.—Closely upon Kolbe's announcement, in 1874, of a new method by which salicylic acid could be prepared cheaply and in large quantities, followed a flood of literature which has continued with little abatement to the present time. But among the hosts of valuable papers little is found in regard to the direct action of this agent upon the blood-cells, or locally upon the circulation.

Cotton[1] studied the effects produced by it on blood in the mass, with the view of determining the differences in its action upon the blood of different mammals, for medico-legal purposes. He notes that with three per cent. solutions the red cells become globular, and that the hæmoglobin is decomposed with formation of hæmatin. He also states that one per cent. solutions cause the central portion of the leucocytes to become more transparent, and gives them a double contour, from which he infers that these cells are furnished with a double membrane.

Thiersch[2] states, without giving the details of his experiments, that as a result of its action the central portion of the red cells becomes transparent, while a sharply defined peripheral zone remains deep yellow; and further that this peripheral ring may separate from the central portion and break up, at regular intervals, into segments, which form little free chains in the fluid. Under the conditions of his experiments the writer did not notice such appearances.

Béchamp,[3] who studied the action of salicylic acid upon the lower vegetable organisms, yeast, etc., found that dilute solutions, while sometimes modifying their structure, did not necessarily kill them, but did suspend their functional activity. These experiments, so far as the writer has the literature at command, are all that bear directly upon the theme of the present study. Of the numerous experiments upon its action on the lower organisms, those of Béchamp are mentioned in this connection only as showing an inhibitory action of salicylic acid upon the function of vegetable organisms apparently analogous to that above recorded upon animal cells.

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[1] Cotton, Action de l'acide salicylique sur le sang et en particulier sur les globules, Lyon, Méd. 50, p. 557, 1877.

[2] Thiersch, Volkmann's Klinische Vorträge, Nos. 84 and 85, p. 657.

[3] Béchamp, Observations sur les antiseptiques, Montpelier Med., Janv. p. 30, Fev. p. 134, 1876.

ARTICLE IV.

THE SMALL PUSTULAR SCROFULODERM.[1] By LOUIS A. DUHRING, M.D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania.

FROM time to time I have met with instances of a rare and striking form of skin disease, to which I desire to call the attention of this Association. There are several reasons why the subject is worthy of investigation. In the first place, the disease is unquestionably rare. Up to the present time but three or four cases have come to my notice. Secondly, the process is characterized by marked and well-defined lesions, and tends to pursue an obstinate and chronic course. It, moreover, always terminates in scarring. Thirdly, the disease is liable to be mistaken for other processes, especially for the small pustular syphiloderm, which it very closely resembles. I have already described the general features of the disease briefly in the second edition of my "Treatise on Diseases of the Skin," page 454, under Scrofuloderma, where it seemed to me it might, for the present, be placed. The account I have given of it in my treatise is as follows:—

"Another variety of disease, of which I have never seen any account in literature, and which, I think, must be viewed as a manifestation of scrofulosis, consists in the formation of pin-head and small split-pea sized, disseminated, yellowish, flat pustules, with usually a raised violaceous areola. In general appearance the lesions resemble those of the small pustular syphiloderm. They crust over gradually in the course of from one to several weeks, with depressed, shrunken, hard or horny, yellowish or grayish, adherent crusts, which in time drop off, leaving marked, punched-out looking, indelible scars, resembling those of variola. The lesions are further characterized by a sluggish, chronic course, and may last weeks or months. They appear at irregular periods, new ones coming out as the older ones disappear, so that the patient is rarely free of them. The disease may continue for years. It may occur upon any region, but in the cases that I have encountered has shown a disposition to appear about the face and on the extremities. Other symptoms of scrofulosis are generally present."

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[1] Read at the fifth annual meeting of the American Dermatological Association, Newport, R. I., Aug. 31, 1881.

I shall now report several well-marked examples of the disease, all of which were under observation for a long period, enabling me to study not only the lesions but the course of the process. They may be regarded, I think, as typical cases.

CASE I. The first case of which I have full notes is that of Mary C——, aged nineteen, single, a milliner, who presented herself for treatment at the Dispensary of the Hospital of the University of Pennsylvania on January 1, 1877. She was stout for her age, but was pale and strumous in appearance, with light-blue eyes, reddish hair, and freckled face, neck, and arms. The submaxillary glands under left jaw were chronically engorged, producing considerable swelling. She stated that her general health had always been and was still good. The disease of the skin, for which she sought relief, had made its appearance suddenly, according to her history, four years before, in December, upon the hands. The character of the lesions was the same then as now. After the first crop of lesions had fully developed, single lesions appeared from time to time, and continued to show themselves throughout the winter. During the summer the disease vanished completely, but returned the next winter. It had in this way continued to appear each year in winter, and to disappear in summer, always showing the same features, but with each attack involving more of the general surface. At first it invaded the hands only; the second season the hands, forearms, and ears; the third winter the same regions, while during the following summer the eruption did not, as previously, disappear, but persisted, and moreover involved the face, legs, and feet. The submaxillary glands first became swollen about a year before coming under observation. The following observations were made at the first examination :—

The eruption may be described as consisting of numerous, disseminated, small, pin-head, and split-pea sized, rounded, firm, pinkish or violaceous papules, papulo-pustules and pustules, in all stages of evolution and involution, together with more or less marked, similarly sized, irregularly outlined, punched-out looking, superficial or deep, soft, pigmented or whitish scars. The lesions are numerous, but are not profuse, from fifteen to thirty existing on either hand. They are disseminated, and show no disposition to group or form any definite arrangement. The majority are of the size of a small split pea, and have a rounded form. As stated, there are papules and pustules and intermediate stages. The papules are the earliest manifestation, and consist of firm, rather diffused, deep-seated, raised infiltrations of a pale pinkish or violaceous colour. The papulo-pustules show a central point of suppuration, which evidently has its beginning and chief seat in the corium considerably below the epidermis. The fully developed pustules, of which lesions the eruption is mainly composed, consist of a pin-head or small split-pea sized central, circumscribed, irregularly-shaped, bright or dull yellowish or whitish opaque suppurative portion, sharply defined against the slightly raised, reddish, papular base. The base or areola is not circumscribed, but fades off rather abruptly into the sound skin. Older pustules show evidences of desiccation, the suppurative portion exhibiting grayish or darkish, raised, rough, hard pin-head sized points. Other, still older lesions, show this point in a shrunken, contracted, dried state, and on a level with the papule or even depressed, and of a hard or even horny consistence. Numerous scars, small and large, pigmented or whitish; of markedly irregular or jagged outline, sharply-defined, for the most part flat and superficial, resembling the scars of varicella and variola, also exist, and constitute a conspicuous feature of the process.

The eruption is distributed chiefly over the hands, forearms, and knees. There are also a few lesions on the face, and on the limbs in other localities. On the forearms it is confined mainly to the extensor surfaces with the exception of a few lesions about the wrists and palms. There are also a number of lesions, in all stages of evolution, on the backs of the hands and fingers. On the face they are less numerous, and less active than elsewhere. In the popliteal spaces they are more papular, and in places two or three are confluent, forming small patches. The hands and fingers, as well as the ears, are bluish, and are somewhat swollen, showing imperfect circulation.

The lesion is essentially a pustule seated on a raised and markedly infiltrated base. It begins in the form of a circumscribed induration, feeling like a small split pea under the skin. It can usually be detected by the hand several days or a week before any change of colour of the skin is noticed. In the course of the next few days it becomes firmer, slightly elevated, and papular, and of a pinkish or violaceous colour, varying from one to three or four lines in diameter. At the end of a week or a fortnight a pustule usually forms in the centre of the papule. As the pustule slowly dries in the course of another week or longer, there remains a firm or hard crust, or occasionally a small epidermic mass, which sometimes adheres persistently for weeks, at other times is cast off or may be picked off as a core. It comes away usually entire, and having a somewhat inverted cone-shaped attachment, resembles a dried sebaceous plug. The cavity which remains is comparatively deep and crater-like in form, and usually contains at the bottom a small amount of yellowish pus. After the core is removed, whether naturally or forcibly, the lesions tend to recovery and cicatrization, and by the end of from three to six weeks, appear as somewhat purplish or bluish, slight, more or less depressed, indurations or spots, pitted in the centre, and often surrounded by a *collerette* of epidermis which projects over its edge and gives the papule the appearance of having been let into the skin. The process of cicatrization proceeds until the papule becomes more or less puckered and drawn towards the centre, sinking slowly to the level of the skin and below it, finally resulting in a whitish, smooth, slightly pitted, sunken, conspicuous scar, from a half line to several lines in diameter, having a punched-out appearance, with a sharply defined irregular border. According to the patient's statement, the average duration of a single lesion is from two to three months. There is nothing of an acutely inflammatory nature about the eruption; on the contrary, it possesses a cold, chronic look. There are no subjective symptoms, but when a lesion happens to be accidentally injured, considerable pain is sometimes experienced.

Several lesions in the papular and papulo-pustular stage were excised and subsequently examined by Dr. Morris Longstreth and myself. The epidermis was normal except over the central portion of some of the lesions where suppuration existed. There it was thinner than elsewhere. The corium was sparsely occupied with lymphoid cells, which stained well with carmine. They were in no way peculiar or characteristic. They were found irregularly disposed, single or in masses, throughout the structure. No particular stratum was especially invaded. Not uncommonly they were in the form of short strings following the course of connective tissue bundles. About the centre of the papulo-pustular lesions the collection was more abundant, and immediately beneath the epidermis formed a closely packed mass, as in the case of other similar papulo-pustular lesions. The sebaceous glands were not involved. The examination showed the process to be a decidedly chronic inflammatory one.

The condition I have described was noted at the time to be peculiar, and to be different from any case previously encountered. No positive diagnosis was made, but the lesions bore such a strong resemblance to the small pustular syphiloderm as to suggest this disease. The patient was placed upon iodide of potassium and afterwards upon cod-liver oil and iron. Later, small doses of mercury were given. During the following six months the patient remained under weekly observation, and the above treatment was persisted in, but with no benefit. The lesions pursued their course apparently uninfluenced by internal remedies. Lotions of corrosive sublimate were also employed, but without benefit.

With the close of the first year's observation and treatment no marked improvement was appreciable. Through the summer the patient was much better than during the previous winter, but with the autumn the process became again more active. At times it was noted that the lesions would assume a cold, indolent, somewhat tubercular aspect, with but slight suppuration ; at other times they began as small pustules, but were always accompanied with an elevated, firm or hard, pinkish or violaceous base. Sometimes the base as well as the pustule was conical in form, flattening as the process proceeded in its course. On several occasions it was thought that recovery was taking place, there having been periods when no new lesions manifested themselves for six or eight weeks. The glandular swellings of the neck also varied, improving and becoming worse from time to time. On several occasions they opened and discharged slightly, leaving no doubt as to their nature. A year later, in the summer of 1879, a note records the fact that the patient was again entirely free of the eruption, and that the glandular involvement had decreased markedly. She has not been seen since, but from the previous behaviour of the process I think it extremely doubtful that this improvement was in any degree more permanent than the former similar experiences.

Case II. The next case I shall present is that of a man, a shoemaker by occupation, forty-one years of age, in average general health. I am indebted to Dr. Van Harlingen for the following notes: He states that he had a brother who died of hip-disease at the age of nine. There is no positive history pointing to scrofula. The disease of the skin to be presently considered was preceded by an attack of acute urticaria. A month later the existing eruption manifested itself on the left wrist, in the form of a few red papules accompanied with itching, and which were mistaken for bug-bites. New ones continued to appear, a few at a time, until in all about a dozen existed over the arms and legs. The hands were not invaded. Some of the lesions healed while others continued to appear; some aborted. Every one, however, that arrived at maturity, he states, was succeeded by a pitted scar. The eruption lasted about three months, disappearing in August, but reddish marks in the place of the pustules remained for some months later, and were exceedingly slow in vanishing. Nearly a year elapsed, he thinks, before the scars became whitish.

A second attack of the eruption began one year after the first attack, namely, in June, 1877. It was more marked than the first. He applied at the University Hospital Dispensary a few times for advice, and subsequently was lost sight of until June, 1878, a year later, when a third attack occurred. It was identical in character with the preceding attacks, but the lesions were more abundant, and also involved the backs of the feet. As before, it disappeared towards the first of September. A fourth attack occurred the next year, in June, 1879, but was not so severe as that of the previous year. The condition, noted at this time, was as follows:—

The lesions are papular, papulo-pustular, and pustular. They are chiefly confined to the forearms, on both extensor and flexor surfaces, and are especially marked about the wrists. There are five on the right forearm, two being typically developed, and about a dozen on the left forearm. They are also found abundantly on the legs, to the number of certainly fifty, and perhaps a hundred, together with many scars. They extend over the backs of the feet. The palms and soles are free, and have always been so. Scattered lesions are found, moreover, here and there over the thighs, buttocks, and abdomen. The other regions are free. The lesions are widely disseminated, and are, as a rule, discrete, very seldom coalescing.

When a lesion first manifests itself, it appears as a pale pinkish, slightly acuminated, firm, well-defined papule, the size of a large pin's-head. It increases in diameter, becomes flatter, and whitish in the centre, where a small suppurating cavity or pit forms. Later, the pustule becomes puckered, the centre sinks somewhat, and a small slough covered with a grayish, yellowish, or brownish crust forms. The base now becomes more indurated and deeper in colour, and somewhat pigmented. On lifting up this crust, which is often adherent, a soft pultaceous or firm mass comes away, leaving an irregularly rounded sharply-defined, punched-out looking, crater-like cavity, containing pus. This soon dries up, leaving an indurated dusky or violaceous red papular or tubercular lesion. Gradually this is absorbed, and finally there remains a sharply defined, ragged, irregularly shaped, whitish scar, deeper at the edges than in the centre. The size of the scar varies from a small pinhead to a split pea. It resembles the impression made on the skin by a watch-key, having a depressed border; the scars of variola are also suggested. About the scar the skin is pigmented of a salmon, dusky-yellowish or violaceous colour. This is very persistent, some of the lesions of last year still exhibiting it faintly.

Occasionally the lesions are painful if struck or injured in any way, and at times there is slight itching about the older ones. Sometimes they manifest a sense of heat. Locally, the disease was treated with an alcoholic lotion of corrosive sublimate, a half grain to two ounces, but with no favourable result.

A month after the above notes were recorded, a crop of large indurated pustules appeared upon the thighs, which ran the usual course, and very slowly disappeared, leaving pigmentary spots and scars. A year later, in

July, 1880, the disease was still mainly confined to the forearms, thighs, and legs. As before, a few lesions existed upon the buttocks and trunk. Upon the limbs the eruption manifestly preferred the extensor surfaces. The character of the lesions had in no way changed. The eruption this year began as usual about the first of May, showing itself first on the forearms, a few new lesions making their appearance every few days.

In this case, as in the first, a characteristic lesion was excised and examined with the microscope. The appearances noted were the same as in the first case, although the infiltrating cells were more abundant.

Case III. A third case was that of a seamstress, nineteen years of age, with light reddish hair, a freckled complexion, and a manifestly scrofulous constitution. She was spare and frail, and looked pale and imperfectly nourished. Her mother died of galloping consumption, and her father of typhoid fever. She had nine brothers and sisters, all of whom died before reaching the age of puberty. Upon either side of the neck there was a chronic enlargement of the lymphatic glands, some of which had broken down, and had thus secondarily involved the skin. This condition was, without doubt, of a scrofulous nature. The following notes were recorded at the date of her admission to the University clinic:—

Recently an eruption has made its appearance rather suddenly. She went to bed about a week ago as well as usual, and awoke in the morning to find a number of small pale-reddish papules scattered over the backs of the hands, unaccompanied by sensations of either pain, burning, or itching. Some of the lesions remained *in statu quo*, while others became slightly elevated, and in a few days manifested signs of suppuration on their summits; some broke open spontaneously, she thinks, and discharged a minute quantity of pus and blood, which rapidly crusted. New lesions have appeared daily, until now, at the end of a week, the backs of both hands and the wrists are abundantly covered with pinhead and split-pea sized papules and pustules. There are none on the fingers, but a few are found on the forearms as far up as the elbows. They are most numerous on the left hand and wrist, where perhaps fifty exist; on the right hand the number does not exceed twelve. The character of the lesions may be best described by first explaining the mode in which they develop. They begin as pinhead or small split-pea sized papules of a light pinkish or pearly-white colour, pretty sharply defined, and raised above the surrounding skin, with a faint areola. As the lesion grows it becomes flattened and somewhat umbilicated, and of a dull pinkish colour. Soon a minute drop of pus appears in the centre of the papule, which is deep-seated and covered with a firm roof, showing, as a rule, no disposition to rupture. At the end of three or four days the summit begins to dry and to grow darker and to form a small, hard, horny crust, which separates at the border, and in a few days comes away, sometimes with a minute drop of bloody pus. If examined at this period a distinct pit, the size of a small pinhead, is seen in the centre of the lesion, with the epidermis somewhat abraded and ragged around it, the dull pinkish or violaceous papule being now enlarged to the size of a split pea. The eruption, therefore, may be described as consisting of numerous, discrete, disseminated pinhead and split-pea sized dull pinkish and violaceous, slightly raised, well-defined, firm, deep-seated papules, papulo-pustules and pustules, in various stages of evolution.

A fortnight after the above notes were recorded, the older lesions had undergone involution, and were paler and crusted on their summits, with small, raised, hard crusts which could be picked off, leaving a deep cavity or pit-like depression. New lesions continued to appear. A month later, it was noted that a few new characteristic lesions were still appearing in the original localities, but the eruption as a whole had much improved. In the way of treatment, locally, a lotion of alcohol and corrosive sublimate was used, while internally, linseed meal in tablespoonful doses was prescribed. The scrofulous glands of the neck were treated with iodoform.

Two months later, the eruption on the hands had almost completely disappeared, but marked pigmentary stains remained. At the end of a year all trace of the disease had vanished, except slight whitish, irregularly shaped, depressed scars, which mark the site of the former lesions; some are conspicuous, like the scars of variola, others are barely perceptible. The scrofulous glandular involvement had also greatly improved, probably under the use of the linseed meal, which agreed well with the patient, and such other general and local treatment as was directed from time to time.

I have thus presented the notes of three marked cases, which it seems to me are sufficient to give an idea of the general characters of this well-defined disease. They all exhibit very similar features. There can be no doubt that they exemplify one and the same process. As regards the lesions, they are identical, the description of those of one case applying equally to the others. The course of the disease too, in all three cases, was similar, and although in one case it proved more rapid than in the others, the disposition of the process in all was emphatically to chronicity.

If we analyze the histories and the general condition of health, we find that in two cases there were positive signs of constitutional scrofulosis, while in the other case, this condition could not be satisfactorily demonstrated. Of the nature of the disease, therefore, it is perhaps premature to express positive opinion, yet there seems to me to be good reasons for regarding the disease, certainly in two of the cases presented, as a cutaneous manifestation of scrofulosis.

The microscopic examination shows the process to be a chronic inflammation, having its seat in the corium, but exhibiting nothing characteristic, either in the cells themselves, their arrangement, or distribution.

Concerning the diagnosis, I may repeat what was briefly stated in the opening remarks, namely, the liability of confounding the disease with the small papular and pustular syphiloderm; I may add, as this manifestation is often seen towards the second year or later, when the lesions are apt to be few, and to pursue a sluggish course. In the first two cases, however, the course of the lesions impressed me as being much slower than in syphilis, and I may remark it was this feature that first diverted my attention from this disease. The violaceous tint is also a symptom which would strike the observer as being different from that noticed in syphilis. Still another striking feature of the disease is the peculiar scarring, which, from the fact of the process having its seat deep in the skin, is marked and severe considering the size of the primary lesion. It is, moreover, different from the scarring of the syphiloderm, in being sharply defined, as though punched out, and irregular, and also jagged or stellate in outline, or in some instances puckered. The disease may also be confounded with acne, especially if it happen to appear on the face only, but the fact that the lesions are not seated in the sebaceous glands, together with the slow course of the process, will serve to distinguish it from this disease.

As far as my knowledge extends, the affection has never been described by authors. It has, doubtless, been confounded with the syphiloderm. There is certainly no reference to it in any of the various works on diseases of the skin with which we all are familiar. In the standard French treatises, where so much space is devoted to the consideration and classification of the scrofulodermata, I have looked in vain for a description which might include the process under discussion. The *scrofulide cornée ou acnéique* of Hardy resembles somewhat the disease, but is nevertheless different, beginning in the follicles. Nor am I acquainted with any reports of cases of rare forms of skin disease which possibly might refer to the process. The cases reported by the late Dr. Tilbury Fox, under the title of "disseminated follicular lupus" (simulating acne), (*Lancet*, July 13 and 20, 1878), bear some resemblance to the disease, but an examination of his article shows the processes to differ in several important particulars to which it is scarcely necessary here to refer. The case presented before the New York Dermatological Society by Dr. Sherwell, last year (*Archives of Dermatology*, July, 1880), which was made the subject of discussion, wherein different opinions as to its nature were expressed by the members of the society, also bears some likeness to the disease I have brought forward in this paper, but it was doubtless the same affection as that reported by Dr. Fox, above referred to. Dr. Sherwell regarded the case, to use his words, as a "true lupus degeneration beginning as an acne."

ARTICLE V.

ANEURISM OF RIGHT AND LEFT PULMONARY ARTERIES; PULMONARY INSUFFICIENCY; DILATATION OF THE RIGHT VENTRICLE.

By JOHN F. DUFFIELD, M.D., House Physician to the Presbyterian Hospital, New York City, Member of the New York Pathological Society.

CASE I. S. C., female, æt. 50, New York, widow, domestic. Admitted to the Presbyterian Hospital August 4, 1881; service of Dr. Alexander Hadden. Family history negative. Previous history: Patient says that about nine years ago she suffered from an attack of pneumonia. Previous to this she had enjoyed fair health. Ever since, she has suffered more or less from palpitation of the heart, with vertigo; has been subject to subacute rheumatic attacks for a period extending over four years;

now suffers, in addition, from dyspnœa and a slight cough. Menses began at eighteen years; always regular. Had three children; labours easy. Complains of great nervousness. No history of syphilis. Temperate habits.

On admission. Very anæmic; general condition poor; lips and finger tips blue; jugulars full, but no appreciable pulsation. Œdema, with prominent veins, in each leg; anorexia; tongue pale, flabby, and indented; bowels fairly regular; pulse weak and irregular, and strikes the finger suddenly and immediately collapses; plain thrill in all the superficial arteries.

Urine. Sp. gr. 1002; reaction, acid; colour, straw; no albumen or casts.

Physical examination. Pigeon-breasted; lungs emphysematous at apices; area of cardiac dulness increased; apex beat plainly perceptible in seventh interspace, to left of the nipple; some episternal pulsation; a diffused heaving thrill perceptible with each systolic contraction, over an area of several inches between the nipple and the sternum. Auscultation reveals a loud blowing murmur taking the place of the second sound of the heart, diffused over nearly all the præcordial space, most distinct midway between the left nipple and the sternum, and about one inch above, and transmitted towards the xiphoid cartilage. At times the character of the sound is almost that of a double murmur.

The diagnosis of aortic insufficiency was made by all who examined her. Search was made for signs of an aortic aneurism, but with negative results.

Treatment. Extra plain diet. Bandages to legs. Tr. ferri chlor. ♏xv, t. i. d.; tr. digital. ♏x, t. i. d.

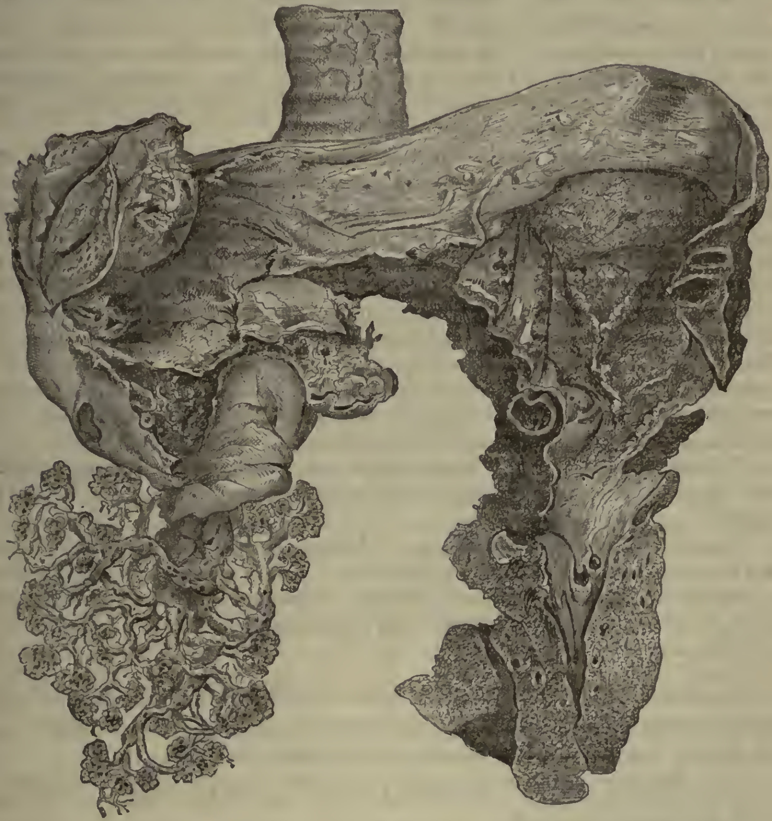
August 9. General condition somewhat improved; better colour; heart much more regular; and murmur more intense.

13*th.* Last night dyspnœa and palpitation extreme; dizzy, and much distressed; systole very strong and firm, the heart remaining contracted in systole every fourth or fifth beat, and intermitting one beat every time; murmur very loud. Ordered exclusive milk diet; substituted for digitalis, sol. morph. sulph. U. S. P. ʒj every four hours.

14*th.* Heart's action fairly regular, but weak; vertigo; patient flighty; breathing hurried and shallow; mucous membranes not so blue as yesterday; feet cold; œdema of legs undiminished. Ordered hot bottles. Chest freely cupped. Ammon. carb. gr. v. p. r. n. Stopped *pro tem.* all other medicinal treatment.

15*th*, 6.30 A. M. Patient found in a moribund condition; venous congestion extreme; œdema of lungs; Cheyne-Stokes respiration; pulse very weak, irregular, and intermittent; failed to respond to the usual treatment, and at 10.30 A. M. she died.

Necropsy twenty-four hours after death. *Rigor mortis* well marked. *Thoracic cavity.* The pericardial sac contained four ounces of bloody serum. The heart was considerably enlarged, and displaced toward the left. The enlargement, however, was confined entirely to the right side of the heart, the left being diminished if anything. There was one small milk patch on the anterior surface of the right ventricle. The weight of the organ was seventeen ounces. The valves of the left side were perfectly free and sufficient. There was, however, slight evidence of commencing fatty degeneration of the mitral valve. The aortic valves and the aorta were normal. The muscular substance of the left side was free from fatty degeneration. The right ventricle was greatly dilated and the walls somewhat hypertrophied. The tricuspid valve showed advanced fatty degeneration and commencing atheroma. Its margins were thickened and widely separated, allowing a free regurgitation. The pulmonary orifice was dilated, and the segments of the valve elongated and thinned. The pulmonary valve was found sufficient by the ordinary water test, but probably would not have been so, under considerable pressure, owing to the extreme thinness and great length of the segments. The pulmonary artery and its right and left branch were widely dilated throughout. Both the



Aneurism of Right and Left Pulmonary Arteries. Anterior Aspect.—In removing the heart and cutting off the root of the great vessels, the anterior wall of the right and left branches of the pulmonary artery, as they sprang from the parent trunk, was removed, leaving only the posterior wall uniting the same. This portion of the artery will be seen directly in front and inferior to the perpendicular portion of the trachea which remains attached. The arteries have been opened along the anterior wall. The points of interest in the right aneurism are from above down: first, the dissection of the coats as noted in the necropsy; the cavity of the sac itself filled with the ordinary fibrinous clot; below, a portion of the pericardium folded over the aneurism; still lower, the ramifications of the dilated terminal branches of the pulmonary artery dissected out of the lung substance. Minus the dissection in the coats, the left aneurism is essentially the same, but below, some of the lung tissue was left intact, as one of the dilated vessels was split open and traced from the sac to the surface. Owing to the abundant fibrinous deposit in each aneurismal dilatation, the actual capacity of the sacs is not well shown in the drawing.

pulmonary valve and the artery showed marked evidence of advanced atheromatous degeneration.

The right pulmonary artery was the site of a large aneurism, which apparently commenced at the junction of the superior and anterior portion, as a dissecting aneurism. Later the superior and posterior portion seemed to have become dilated and filled with fibrin, which at the necropsy appeared to be granular. The aneurismal tumour was about the size of a duck's egg. Length, 2¾ in.; diameter, 2 in. The numerous branches springing from this aneurismal dilatation were also dilated, and many of the small branches seemed to be dilated.

The left pulmonary artery was also the seat of an aneurism located at about the same point as the one just described and approximately of the same size. The left, as well as the right one, was filled with granular fibrin; but there was no evidence of any dissection of the coats. The arteries springing from the left aneurism were also dilated, even to the very surface of the lung.

The lungs were slightly adherent to the chest wall. The pulmonary tissue was perfectly normal, excepting a deep congestion and some œdema. There was a slight amount of emphysema at the apices.

Abdominal cavity. The spleen was soft, dark blue in colour, and weighed only four ounces. Nothing especially abnormal was noticed in the alimentary canal. The portal veins, its branches and their tributaries, were distended with blood. The kidneys were very small, the right weighing three and one-half ounces, the left two and one-half ounces. Their capsules were slightly thickened and extensively adherent. The underlying renal tissue was finely granular. *Microscopical examination.* There was large increase in the interstitial tissue, and there was slight granular degeneration of the epithelium (sclerotic kidney). The liver was small, although it was congested, pigmented, and slightly fatty. Its weight was only forty-one ounces.

The following record of cases, which is as complete a one as could be obtained from the accessible libraries, was compiled under the direction o Dr. W. H. Porter, Curator of the Hospital, and will serve to show, not only the extreme rarity of pulmonary aneurism, but the unique character of the specimen presented.

Case II. Ambrose Paré ("Observations on Aneurism," by John E. Erichsen, London, 1844) mentions the case of a tailor named Belanger, who had an aneurism of the pulmonary artery, of which he died suddenly in consequence of the vessel bursting while he was playing at ball. Paré found a large quantity of blood effused within the thorax, the body of the artery dilated to the size of a fist, and its lining membrane quite ossified.

Case III. Lancisus ("De Motu Cordis et Aneurismatibus," Lugduni Bat. 1749, also quoted by Erichsen) mentions the case of a hatter who, "in consequence of too great exertions, especially of an afternoon, in beating the felt f which hats are made, and inhaling at the same time coal-smoke mixed with a watery vapour, became affected with a dilatation of the pulmonary artery."

Crisp says: "Dilatation of this artery (*i. e.*, pulmonary), although not often described, is probably far from infrequent."

Case IV. Hope relates an example where the artery was dilated to four and a half inches in circumference, and in "Case 84, Table of Arteries," the circumference of the vessel had increased to the same extent.

Case V. In the Museum of St. Bartholomew's Hospital (No. 90) there is a specimen of aneurism, with deposit of fibrin, in the left branch of the pulmonary artery.

Case VI. Mr. Adam, in the 2d volume of the *Calcutta Medical Society's Transactions*, mentions a case of sudden death from the spontaneous rupture of this artery. The vessel was also considerably dilated, probably aneurismal.

Crisp says furthermore (*Prize Essay: Diseases of Bloodvessels*, London, 1847, page 91): "Two cases (Nos. 117, 359) of aneurism of the branches of the pulmonary artery will be found in the "Table of Aneurisms. I know of no case of aneurism of that artery before its division." The following are the cases alluded to by Crisp:—

Case VII. Male, æt. 29; authority, *Edinburgh Monthly Journal of Medical Science*, vol. iii.; cause of death, hæmoptysis; attendant, Dr. Peacock.

Case VIII. Male, æt. 41; authority, *Lancet*, 1841; cause of death, hæmoptysis; attendant, Mr. Foster.

According to Crisp's table, out of 551 cases of spontaneous aneurism reported in Great Britain from 1785 to 1847, two were of the pulmonary artery.

Case IX. Dr. Dlauhy (*Viertelj. für Prakt. Heilk.* 1848) mentions a case of pulmonary aneurism. The vessel was in a state of well-marked atheromatous degeneration. On the posterior aspect was a sacciform aneurism of the size of quite a large walnut. The cavity extended particularly toward the right, the walls lying upon the left auricle, and producing a shallow indentation upon the latter. The parietes were composed of the degenerated atheromatous arterial tunics held together by the serous covering of the pericardium. Its cavity communicated with the lumen of the vessel by means of an oval opening, an inch in diameter, and, as is usual in cases of aneurism, was filled with fibrinous clots. On the posterior wall of the artery, running in the direction of the circumference of the artery, and extending through the pericardial covering, was a rent, measuring 1″3‴ (Viennese) in length. Its edges were ragged, uneven, and everted towards the cavity of the pericardium. Towards the right, the pericardium between the great and the adjacent aorta had been torn away and pierced in a cribriform manner.

Case X. Prof. Gilewski's case (*Weiner Med. Woch.*, Nos. 33–38, 1868). Autopsy showed a sacciform dilatation of the pulmonary artery, the circumference of the vessel being equal to that of a pomegranate. The anterior wall united with the pericardium, the latter and posterior walls in relation with the adjacent vessels were connected respectively with the aorta and the left auricle by means of short-fibred connective tissue. The axis of the sac corresponded with that of the artery. The sac itself contained considerable blood and fibrinous clots. The walls consisted of all the tunics of the artery, the anterior, in addition, being covered by the parietal layer of the pericardium. The inner tunic was very much thickened and degenerated. The sac involved the *trunk* of the artery, and its two short branches arose immediately from the sac. The cardiac opening of the pulmonary artery was very much increased in size, the semilunar valves correspondingly enlarged, smooth, and translucent. One of the valves near its free border presented an opening the size of a pin's head.

Case XI. Dr. Dowse exhibited (*Lancet*, 1874, vol. ii.) a case of aneurism of the pulmonary artery which occurred in a young woman aged nineteen. At the autopsy, recent lymph covered the outer surface of the pericardium and adjacent pleura, while recent lymph and a small quantity of blood occurred in the cavity. *At the root* of the pulmonary artery was a globular tumour, the size of a pullet's egg. A rent occurred in the outer wall of the aneurism, of which the sac was filled by a firm clot. There were vegetations on the pulmonary valves, and the right ventricle was dilated, the tricuspid valve being incomplete.

Case XII. Skoda's case (*Abhandlung über Perk. und Auskult. Wien.* 1844, p. 311). Autopsy showed the trunk of the pulmonary artery to be dilated to a sac of the size of a goose's egg. The ventricular opening was somewhat enlarged, the valves normal and sufficient. The lumen of the two primary branches of the vessel, at their point of origin from the sac, was reduced to the size of a crow's quill. The right branch was somewhat hypertrophied and dilated. The left was normal. . . . The tunics of the aneurismally enlarged pulmonary artery exhibited the same changes seen in aneurisms of the aorta.

ARTICLE VI.

GOSSYPIUM HERBACEUM. AN INVESTIGATION OF THE PHYSIOLOGICAL EFFECTS OF GOSSYPIUM HERBACEUM MADE IN THE MATERIA MEDICA LABORATORY OF JEFFERSON MEDICAL COLLEGE (and submitted as a Thesis for the Doctorate). By J. CHARLES MARTIN, M.D., of Martinsville, Indiana.

THERE have been several examinations of the bark of gossypium herbaceum. It seems, however, that each investigator failed in identifying the principle which gives to fresh gossypium its therapeutic value. The earliest analysis was made in the year 1856, by Mr. Robert Battey, and the result was published in the *American Journal of Pharmacy* for that year. However, nothing of importance regarding a therapeutically active agent can be gleaned from the report.

Prof. E. S. Wayne, of Cincinnati (*Nashville Med. and Surg. Journ.*, vol. ix. No. 1, p. vi.), and Mr. H. B. Orr, of Nashville, Tenn., made experiments in which they attempted the isolation of an active principle, but the results of their investigations were unsatisfactory; no crystalline principle was found. To Mr. J. U. Lloyd, of Cincinnati, I am indebted for the following report of his investigations of gossypium, and for a more complete account of the result of his laboratory experience with the drug, I refer the reader to the *Proceedings of the American Pharmaceutical Association* of the year 1876.

"The characteristic of fresh or recent gossypium bark resides in the fact that it yields a *yellow tincture* which in a few hours changes to a rich red. I am convinced that this colouring matter is intimately connected with the therapeutical value of the drug, if, indeed, it is not the real active principle, for an extract in which this principle is destroyed or absent, proves to be worthless as a remedy. According to Prof. E. S. Wayne (1872) and Mr. W. C. Stæhle (1875) this body is related to the resins. Mr. W. A. Taylor examined the bark in 1876, and regards it as a *chromogen*, stating that it dissolves pale-yellow and that the solution changes to red."

The following named ingredients were found in the bark of the root: gum, albumen, sugar, starch, tannic and gallic acids, chlorophyll, iodine, caoutchouc, black resin, red and white extractive matter, and oleaginous matter. The last two abound in this plant.

It was first employed by physicians of our own Southern States; Dr. Bouchelle, of Mississippi, being among the first, if not *the* first physician who employed it in practice. It was used in the treatment of intermittent fever, and with such apparent success that one man enthusiastically states, that were he compelled to dispense with quinia or cotton-root, he would hold to the latter. It is no doubt from the presence of iodine *antiperiodic*, but of course not to be compared to the cinchona alkaloids, though I should think it useful in the treatment of the malarial cachexia, enlarged spleen, etc. (*American Journal of Pharmacy*, July, 1872, p. 289).

Many physicians claimed great merit for it in the treatment of *amenorrhœa* and post-partum hemorrhage. The presence of gallic and tannic acids accounts for its efficacy in hemorrhage after delivery.

Garrod (*Essentials of Mat. Med. and Therapeutics*, American ed., 1864, p. 190) says: "The cotton-root is said to promote the contractions of the uterus in the parturient female."

But in the Southern States of our own country there seems to be almost a general belief in the abortifacient powers of the drug, that is to say, a special influence to *initiate* uterine contractions in the pregnant state.

Dr. Porcher, in his work *Resources of the Southern Fields and Forests*, after speaking of the uses of the medicament in the treatment of disease, says:—

> "It appears, moreover, to have a *specific* action on the uterine organs. Dr. Ready, of Edgefield District, informs me (1849) that his attention was first called to its emmenagogue properties, by an article which appeared in the *New Orleans Medical Journal* some years since. He has since used it in suppression of the menses, but more particularly in cases of flooding, and with entire success. It seems to produce as active contractions of the uterus as ergot itself."

Dr. Geo. B. Wood (*U. S. Dispensatory*, 14th ed., p. 454) says:—

> "The root of the cotton plant has been employed by Dr. Bouchelle, of Mississippi, who believes it to be an excellent emmenagogue, and not inferior to ergot in promoting uterine contractions. He states that it is habitually and *effectually* employed by the slaves of the South for producing *abortion*, and thinks that it acts in this way *without injury to the general health.*" (*West. Journ. Med. and Surg.*, Aug. 1840.)

Dr. Bellamy, of Columbus, Ga. (*Atlanta Med. and Surg. Journ.*, Oct. 1866, vol. vii., No. viii. p. 337), fully confirms the statements made by Dr. Bouchelle. Mr. Weatherby, however, denies that, within his observation, these statements are true.

Dr. T. J. Shaw (*Nashville Med. and Surg. Journ.*, 1855, vol. ix., No. 1, p. 4) has used it to a very large extent in his practice, and thinks it equal to ergot as a *parturient*, whilst it is attended with much less danger.

Stillé and Maisch (*National Dispensatory*, 2d ed., p. 677) say:—

> "The only virtue of cotton-root consists in its action on the uterine system. It has long been used (so it is reputed) by the female negroes of the South to produce abortion. There appears to be but little doubt that it acts like ergot on the uterus."

From these comments on the action and uses of cotton-root it will be seen that there is a good deal of evidence to show that it has the power to promote uterine contractions, and from the statements above quoted it would seem to be equally as valuable as ergot in the parturient state. However this may be, the statements of Drs. Bouchelle and Bellamy should be carefully examined. How any drug can act powerfully enough to produce such physiological changes in the womb as must of necessity take place when abortion is produced, and accomplish this without injury to the general health of the subject, seems inexplicable. That this medicine is used in attempts to produce abortion in the female negroes of the South, I do not deny. But I do not believe, from our investigations and from the results of our experiments as to the physiological action of this drug, that it has the power to *initiate* uterine contractions; and in the cases where it is reported that abortion was produced, there were agents used far more potent or some accidental condition was present that produced the result. Were it true that this drug had the power claimed for it, there is little doubt but that it would be in the hands of every abortionist, and would be a mighty power for evil. As a question of this kind can be settled only by properly conducted physiological experiments, I have undertaken the study, and submit my results in this thesis for the Doctorate. In all the experiments I used a preparation (fluid extract) prepared by Mr. J. U. Lloyd, of Cincinnati, O., from *recent* bark of Gossypium herbaceum, gathered from the root of the *living* plant after it reached maturity and just before the boles opened.

Experiment 1.—Oct. 20, 1880. 9.12 A. M. Injected under the skin of a small frog ♏x of the fluid extract of gossypium. After waiting twenty minutes, and there being no marked effect, I gave ♏x; in half an hour the animal became somewhat dull; I injected ♏x more, and in five minutes the frog was under the influence of the drug, being very dull and stupid, and not attempting to move unless irritated. He was suspended by a cord through the nose and his toes touched with acetic acid. In twenty seconds he drew up both legs; this was repeated in a few minutes and there was then no attempt to get rid of the acid. 10.20. The sciatic nerve was now exposed, and on mechanical irritation there were slight muscular contractions. On the application of electricity there were vigorous contractions. The chest was opened at 10.30, and the heart was beating six times per minute, but with good, strong contractions. Mechanical and electrical irritation caused the heart to beat more forcibly and more rapidly for a short time.

Experiment 2.—Oct. 21. 8.44 A. M. Injected ♏xx into medium-sized frog. 9.08. The animal was dull. Injected ♏x–f℥ss in all. The frog came under the influence rapidly. There was impaired motion. Sensation but slightly impaired. 9.32. The frog was suspended and both legs touched with acetic acid. He immediately drew up both legs. 9.46. Injected ♏x. 10. No more marked effect. 12.10. There was nothing further noticed, excepting, that the animal was more dull and stupid. I think the fact that there was no more marked effect from the quantity given, was due to some of the drug being wasted or lost in its administration. 12.24. Injected ♏x. 12.34. The frog is now fully under the influence of the medicament. The sciatic nerve was exposed, and mechanical and electrical irritation produced marked muscular contractions. 12.45. Frog suspended and both legs touched with acetic acid, and in five seconds he drew up both legs. 12.56. Chest opened. The heart was beating regularly, 26 times per minute, with good, strong contractions. Mechanical and electrical irritation caused the heart to beat more forcibly and rapidly for a short time.

Experiment 3.—Oct. 23. 8.50. Injected ♏xx into small frog. In five minutes it came under the influence of the drug. When placed on its back the frog was unable to turn over. Great want of muscular power. Pinching the skin caused muscular movements. 9.10. The sciatic nerve was exposed. Mechanical irritation produced muscular movements. Electricity, interrupted current, caused strong contractions. 9.18. Frog suspended and both legs touched with acetic acid, and in five seconds he drew up both legs. 9.25. Chest opened and heart found to be beating sixteen times per minute; good, strong, and regular contractions. Mechanical and electrical irritation produced more rapid contractions.

Comments.—These experiments are very uniform in results, and throw a strong light on the physiological powers of the drug. In the first place, the large amount necessary to produce definite results, is an important fact. The stupor, inattention to surrounding objects, lowered perception of impression, and diminished muscular activity, are probably due to the effect of the drug on the cerebrum.

State of Motor Function.—The sciatic preserves its irritability; on irritation, muscular contractions ensue. Muscular contractility is unimpaired, and the muscles respond to chemical, mechanical, and electrical stimulation.

State of Sensibility.—At first sensibility is unimpaired. On pinching, or application of acetic acid, the animal attempts to get away; after a time, however, and on the exhibition of a larger quantity of the drug, sensibility is so far diminished that no amount of irritation causes the least movement. Is this reduction of sensibility due to the state of the sensory nerves, of the spinal cord, or of the cerebrum? Most probably the last. Why? No lessening of sensibility occurs until the stupor becomes profound, and no diminution of the reflex function takes place until the cerebral functions—perception of sensations—is lost, apparently.

State of Reflex Functions.—On touching the legs with acetic acid, the frog suspended, the legs are drawn up indicating a ready appreciation of pain, and preservation of the reflex actions.

State of Circulation.—There is no change, either of depression or stimulation of the cardiac function.

Experiment 4.—Oct. 23. I divided the medulla of a small frog and isolated the sciatic nerve by ligating all the tissues and dividing the femur. 11.40. Injected ♏xxx. 12.45. Chemical and electrical irritation to the leg not ligatured caused muscular contractions. The same applications caused contractions in the muscles of ligatured limb. Pinching the nerve produced movements. Reflexes not abolished. Sensation unimpaired.

Experiment 5.—Oct. 27. Divided the medulla of young frog, and isolated the sciatic nerve as in previous experiment. 9.20. Injected ♏xx hypodermically, and at 9.40 the tests were applied. Mechanical irritation produced muscular contractions in both limbs, and the sciatics of the two sides responded in the same way. 10.15. Chest was opened, and heart found to be beating twelve times per minute, with good, strong contractions. There was no paralysis.

Comments.—These experiments demonstrate that gossypium has no action on the peripheral or spinal nerves. The responses of nerve and muscle are precisely the same in the limb cut off from the general circulation as in the other extremity. The reflex functions, and motility and sensibility are the same after the division of the medulla. Hence, the stupor noted after the large doses is due to the cerebral effects of the drug.

Experiments on Warm-blooded Animals :—

Experiment 6.—Nov. 20. 9.15 A. M. Injected into the peritoneal cavity of female rabbit fʒiij of the fluid extract. 9.35. The animal is decidedly intoxicated, has a staggering gait. 10.27. The rabbit now lies on its side completely relaxed. Does not attempt to move unless irritated. There is no paralysis. 11 A. M. The animal is somewhat stupid, but is coming from under the influence of the drug. This rabbit was supposed to be pregnant. Nov. 22. The effects of the previous administration of the drug having worn off; at 9.10 A. M. I injected fʒv of the fluid extract into the peritoneum. The animal became influenced very rapidly, and in 10 minutes was unable to walk. The stupor went on increasing, until at 3 P. M. the animal died.

Sectio Cadaveris.—The uterus was not impregnated. There was no hyperæmia of the womb or of its appendages, which were in every respect normal.

Experiment 7.—Dec. 15. 9 A. M. Injected fʒiij of the fluid extract into the peritoneal cavity of a guinea pig. In ten minutes the sow was dead, having been overwhelmed by the rapid absorption of the medicament. There were no convulsions nor uterine contractions.

Sectio Cadaveris.—The animal was pregnant, the womb containing two fœtuses. There was no hyperæmia and no apparent action in any part of the uterine system.

Experiment 8.—Dec. 20. 1.05 P. M. Injected fʒij of the fluid extract into the peritoneum of a doe rabbit, supposed to be pregnant. The animal became dull and stupid; otherwise, there were no other symptoms differing from those seen in previous experiments. Dec. 22d. 9 A. M. The rabbit used in previous experiment having fully recovered, I injected into the peritoneal cavity f℥ss of the fluid extract. The animal died in a soporific condition two hours later.

Sectio Cadaveris.—The womb contained two fœtuses. There was no evidence of any uterine action, or other conditions indicating a special tendency to affect these organs.

Experiment 9.—Dec. 22d. 1 P. M. I injected fʒij of the fluid extract into the peritoneum of a doe rabbit, pregnant. The dulness and stupor were well marked; but no signs of uterine contractions. The animal was allowed to fully recover, and forty-eight hours afterward was given a fatal dose, f℥ss. The animal died in two hours and twenty minutes, without any signs of uterine action.

Sectio Cadaveris.—The womb contained one fœtus.

Commentary.—The above experiments on impregnated rabbits are very interesting and probably have a high degree of importance. In the first place, we note that the effects on warm-blooded animals possess a general resemblance to those on cold-blooded: a gradually increasing stupor, impairment of motility and sensibility, but only in the same ratio with the cerebral depression. In the second place, the entire absence of uterine action from even toxic doses should be remarked. It is well known that rabbits conceive and abort with equal facility. When these experiments were going on, an impregnated rabbit, on which some experiments with picrotoxine were being performed in the laboratory by Prof. Bartholow, aborted. Much constitutional disturbance followed, and the animal died from puerperal metritis and peritonitis. That there was no change in the appearance or condition of the uterus, ovaries, and pelvic peritoneum, in any of my cases, seems conclusive against the view, that this remedy possesses the power heretofore ascribed to it, of initiating or promoting uterine action.

ARTICLE VII.

MECHANISM OF FORCEPS LABOUR AND THE PRINCIPLES OF FORCEPS CONSTRUCTION.

By W. H. STUDLEY, M.D., of New York.

IT is self-evident that the proper construction and use of the obstetric forceps must be intimately related to, if not entirely dependent upon, a tolerably thorough knowledge of the shape, the planes, and the curves of the female pelvis, together with those of the fœtal head and the mechanism of the passage of the latter through the former.

The Chamberlens in England, about the middle of the 17th century, supposed to have been the inventors of the obstetric forceps, gave to their instruments the cranial curve only. They were straight forceps, with a curve on the flat in each blade, calculated to fit the general cranial convexity. About a hundred years later, Levret, of France, and Smellie, of England, contested the honour of adding to the cranial curve that of the pelvic curve, consisting of a concavity of the upper or anterior edges of the blades and a convexity of the lower or posterior ones, together with an upward or anterior bend of the blades at the shanks of the handles. These curves and bends have passed through many modifications to suit the fancies of would-be improvers; but in the main they have added but little if any improvement to those of Levret and Smellie. From their time the forceps underwent no material change until Tarnier, of France (or, as Dr. Smith, of Philadelphia, would have it, Hermann, of Berne), gave us a forceps with an additional curve, viz., the perineal curve. In regard to the respective merits of these varieties of forceps, as also with a view to the deduction of some fundamental principles of forceps construction, I propose to discuss them briefly in the light of the study of the pelvic shapes, planes, axes, etc., together with the laws of the cranial descent in natural labour.

The teaching in regard to the planes and axes of the female pelvis hitherto held, and almost universally acted upon, is as follows: The plane of the superior strait corresponds to a line drawn from the top of the sacrum to the top of the symphysis pubis. The plane of the inferior strait corresponds to a line drawn from the tip of the coccyx to the bottom of the symphysis pubis. The general axis of the pelvis is a line formed by the junction of the cutting points of the axes of all the planes represented by lines drawn from different points in the sacral curve to a point outside of and beyond the pubes, where the planes of the superior and inferior straits cut each other. This general axis is almost universally represented as beginning with the axis of the superior strait, and gradually departing from it in an anterior or pubic direction, and never, so far as I have consulted diagrams of different authors, in a posterior or sacral direction. Although not positively asserted, yet this curve is represented as being close to, if not coincident with, an arc of a circle formed by placing one point of the compass on the junction of the prolonged planes of the superior and inferior straits, and sweeping the other from the middle of the plane of the superior strait until it cuts the plane of the inferior. In accordance with the views thus suggested, obstetrical writers and teachers have hitherto inculcated the doctrine that the fœtal head enters the superior strait in a direction corresponding to a line drawn perpendicularly to its plane. Now, this prevailing representation of the pelvic curve and the doctrine based thereon are erroneous, and the evil influence which they have exerted on the manipulation of the forceps has resulted, in my estimation, in the most disastrous consequences. If it shall turn out to be that the head does not enter the superior strait in a line with its axis, but in one that cuts it at quite an angle, and it shall be made to appear that the general pelvic axis is a line departing from the axis of the superior strait in a posterior direction instead of an anterior one, it must be plainly evident that the practice hitherto followed of varying the handles pubicwards from the moment the head enters the pelvic excavation until its exit, is one which not only materially frustrates the accoucheur's efforts, but endangers the mother and child. Who shall estimate the percentage of fœtal marrings and pubic injuries entailed by these misdirected and therefore harmful tractions? If any one will take the average female pelvis and draw a line from the lumbo-sacral junction to the top of the symphysis pubis, the diagrammatic representation of the plane of the superior strait, he will find that this line forms quite an obtuse angle with the upper third of the anterior face of the sacrum and an acute angle with the upper fourth of the posterior face of the pubis. In other words, the upper third of the sacral and the upper fourth of the pubic faces looking towards one another are not parallel to the axis of the superior strait, do not depart from it in an anterior direction, but do follow a line departing from it in a posterior direction. It is, therefore, simply impossible for the head to enter the pelvic excavation in the line of the axis of the superior strait. From the different measurements which I have made, it must do so in a line forming posteriorly an angle of fifteen to twenty degrees with the axis of the superior strait. I say that it *must* take this course, and the reason is that the bevelling of the upper posterior face of the pubes against which the head impinges, compels it to do so, and, in obedience to the law of moving bodies—preserving the line of least resistance—it glides under the receding face of the sacrum.

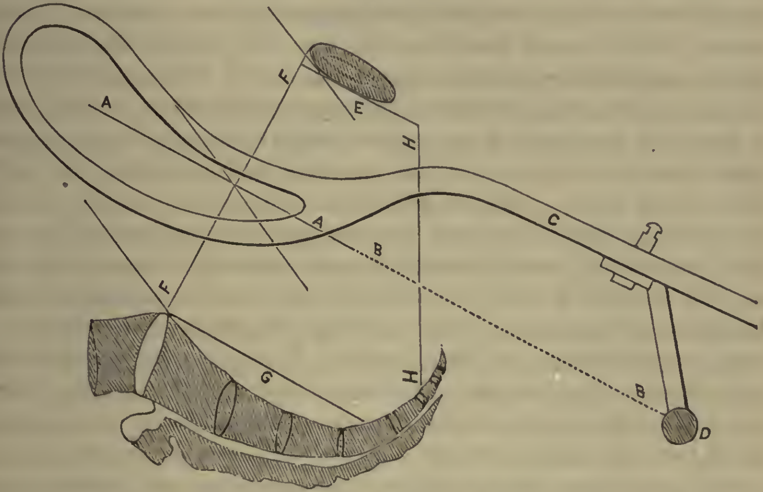
Now while it is clear, that, if this pelvic axis be strictly pursued in making our tractions, it will be in a curve quite at a distance posteriorly to the one generally represented, and in all difficult labours should be the one followed, yet the general pelvic excavation for some three inches below the superior strait may be regarded and practically is a straight tube, whose axis is that of the superior strait. Take a piece of stove-pipe some four and a half inches in diameter; let one end be a strictly transverse cut representing the superior strait, and the other an oblique one two inches from the anterior end of the superior strait, and three inches from its posterior end, and you will have a fair diagram of the average planes of the pelvic tube for that distance. If a line be drawn from the promontory of the sacrum to the junction of the third and fourth bones, or about the middle of the fourth bone, it will be seen to be at right angles with the plane of the superior strait, and hence parallel to the axis of that strait. This line will be found to be about three inches in length, describing a chord of a somewhat shallow circle, and leaving a distance from the deepest point of that circle of from one-half to five-eighths of an inch. Again, if a line be drawn as a tangent to the posterior surface of the pubes, it will be found to be perpendicular to the plane of the superior strait, parallel to the axis of that strait, and hence parallel to the sacral chord just described. This tangential line representing the pubic plane should be about two inches in length, reaching, therefore, a point from a third to half an inch below the lower boundary of the symphysis pubis. Why do I extend the pubic plane to this point? I do it in order to reach the true pubic arch occupied by the fœtal head in the process of birth. Cazeaux and others give the depth of the symphysis pubis as about one and a half inches. Now a glance at the average female pelvis will show that the cranio-pubic arch just alluded to leaves a recess of a small arc at its top about one-third of an inch in depth. This little receding arc, whose chord is from an inch and a quarter to an inch and a half in length, subserves the purpose of protecting the urethral canal and its bulb from injury during the exit of the child's head. Below this little receding arc the ischio-pubic rami may be imagined to continue their arcs until they meet, and then we have the true cranio-pubic arch. As if to emphatically exhibit this fact, it will be observed, in looking at the pelvis, that the columns of this arch are distorted outwardly as if a rounded body had been forcibly expelled from the pelvis, whilst the bones were soft, and had pushed them before it. If, then, this be the true pubic arch, it is evident that it is wrong to begin the line representing the plane of the inferior strait at a point nearer than about one-third to one-half of an inch below the bottom of the symphysis pubis.

Now as regards the sacral boundary of the inferior strait, it seems to me from all reasonable considerations that the coccyx should be excluded. All agree that it is a movable bone, as pliable in a backward and forward direction as any of the soft parts between its tip and the fourchette; and why it should ever have been thought a necessary part in the measurements of the planes and straits of the bony pelvis, is unaccountable to me. With its exclusion the terminus of the sacral end should be the tip of the last bone of the sacrum. According to the old measurements, a straight line drawn from the sacro-vertebral angle to the point of the coccyx measures about four and a quarter inches, while the curved line of the sacrum measures about five and a quarter inches. My lines of measurements—excluding the coccyx—would be respectively three and three-quarter inches for the straight one, and four and a quarter for the curved one.

The plane of the inferior strait then would be represented by a line beginning in front or at the pubic end two inches below the front terminus of the superior strait, and three and three-quarter inches below the posterior or sacral end of the same strait; in other words, the inferior strait is represented by a line beginning about a third or a half of an inch below the symphysis pubis, and terminating at the tip of the last sacral bone. It hence results that the front or pubic plane of the pelvic excavation is deeper or longer, while the sacral plane is shorter than hitherto usually represented. The old representation that the pelvic excavation is only an inch and a half deep in front, while its sacral sweep behind is five and a quarter inches, is to be corrected by that which describes it as two inches deep in front, while the posterior or sacral sweep is four and a quarter inches. Now let it be observed that the fourth bone of the sacrum, just about the point where the chord or the plane of the sacrum hitherto described strikes, has a sharp bend forwards, and that bend, together with its prolongation in the last bone of the sacrum, constitute the fixed bony portion of the pelvic floor. This sacral chord or straight plane of the sacrum, as before said, is about three inches in length. Now if the pelvic excavation were to be regarded as rigidly bounded by this plane behind and by the pubic tangent or plane in front, and the bony pelvic floor is where I have located it, it is evident that the child's head, from the time it entered the superior strait until it reached the pelvic floor, would travel in a straight direction the distance of at least three inches—that being the length of the sacral plane, and there being no sacral push to project it forwards until it reached the sharp sacral bend to which I have alluded. That direction, too, would be in strict correspondence with the axis of the superior strait, for the planes of the pubes and the sacrum are parallel to that axis.

For all practical purposes, then, so far as directions in the use of the forceps for this portion of the pelvic excavation are concerned—*i. e.*, in making tractions from the superior strait down to the pelvic floor—it would be sufficient to state in general terms that the blades should be applied with their longitudinal axes corresponding to the axis of the superior strait, and that tractions should be made in a line with it until the head reaches the pelvic floor, when and where, by the impingement of the sharp sacral bend against it, the head is projected forwards and extension begins. It would be sufficient, I say, to inculcate this general direction; for, although a departure from the axis of the superior strait does actually take place in the majority of instances in a backward direction from it, yet it is so slight that but little hindrance can be encountered, except when the head is located at the very brim; and in all cases where, in consequence of a disproportion of head and excavation, the descent is rendered difficult. In such instances the rule should be to apply the blades and make tractions in a line posterior to and forming an angle of some fifteen or twenty degrees with the axis of the superior strait. But some general rule is desirable for the inexperienced and the unmechanical, and therefore, I say again, it is sufficient to say that tractions should be made in a line of the axis until the pelvic floor be reached, and until that be accomplished, whatever we do, we must in no wise vary the tractions in a direction anterior to that axis. It is scarcely necessary to give the reasons why we emphasize this latter point. To the most obtuse it must be clear that in just the ratio in which we vary the tractions in an anterior direction from that axis, in just that ratio do we render our efforts futile by impinging the fœtal head against the pubes. I have no hesitancy in hazarding the statement that in full $\frac{90}{100}$ of forceps labours the chief difficulty encountered is due to these untimely anterior tractions, coupled with the faulty curve of the ordinary forceps. But of this anon. Thus much for the indications until the pelvic floor be reached.

Fig. 1.



A, A. Axis of superior strait. *F, F.* Superior strait. *H, H.* Inferior strait. *G.* Sacral plane. *E.* Pubic plane. *B, B.* Traction line. *C.* Index handle. *D.* Traction handle.

Let us now turn our attention to the evidences as to *when* it is reached and the *indications to be followed* from that point until the fœtal head is brought out of the vulva. Of the evidences that the head is brought down to the pelvic floor, and its further progress must be toward the inferior strait, we are in possession of at least *three*, either one of which, when fully appreciated, is sufficient to point out the indications as to the variation of our tractions. The first of these depends upon the *sense of palpation*, the second upon the *muscular sense*, and the third upon the *sense of sight.* A digital examination with the index finger directed along the vaginal surface of the perineum and over the surface of the coccyx will readily determine whether or not the head is on the pelvic floor. When the forceps are not in the hands of an expert, this, perhaps, is the simplest and surest method of deciding that fact. But the expert, and even the inexperienced, possessed of an ordinary amount of acquaintance with the mechanism of his work and an alertness for indications, wish no better proof than the *muscular sense* of the extending head transmitted through the forceps to the hand. With a forceps whose blades have the proper transverse and longitudinal curves, enabling them to grasp the cranium with an equable entirety, the head in its progress under tractions in the axis of the superior strait will, when the sacral curve forces it into extension or a forward movement, sensibly lift the handles of the forceps and thus give the sign that the pelvic floor has been reached, and that henceforth superior axis traction must cease. If not alive to either of the above evidences, there is one consisting of ocular demonstration which no one but the veriest bungler ought to mistake: it is the incipient bulging of the perineum. This, perhaps, is not evidence that the pelvic floor has just been reached, but it is evidence that extension of the head is in its incipient progress, and this latter is proof positive that it has been reached, whether immediately before or more remotely.

When one or two or all of these signs collectively are furnished, the indications are clear that the handles of the forceps must be varied in an anterior direction, and that tractions must now leave the axis of the superior strait, and follow that somewhat irregular curve that sweeps under and around the pubic arch. This part of forceps labour is attended with as many if not more difficulties and dangers than that which brings the head from the superior strait to the bony pelvic floor; and, singular as it may seem, I regard these dangers and difficulties as lying in an exactly opposite direction to that usually urged by the books and teachers. The anxiety hitherto manifested has been in regard to the danger threatening the integrity of the perineum by making tractions in the perineal direction; to avoid this, a strenuous warning has been urged to elevate the handles too early rather than too late, and the result has been in but too many instances that the head has been turned out by a prying-lever process, inflicting not only perineal laceration,—just the danger sought to be avoided—but contused wounds of the pubic arcade which has served as a fulcrum for the forceps shanks, and cuts of the vagina, and in some instances of the ischio- and pubio-coccygeus muscles, by the posterior end edges of the blades. If the forceps have well-fitting blades, and the head is snugly held by them, it is easy to see how by such a manœuvre the top of the occiput is made to hitch under and against the pubic arch as a pivotal point, and the forehead and the face forcibly swept out by a long radius against all of the soft parts anterior to the coccyx. Why should not the perineum and recto-vaginal septum be lacerated under such circumstances? If the blades be defective in their curves, either too straight longitudinally or too flat transversely, so that the parts of the head seized are only two antipodal bosses upon and around which they can turn as easily as a button on a door, it is again easy to see how readily the shanks of the forceps are made to impinge against the ischio-pubic rami, while the posterior blade ends, leaving their proper position, are made to plow into the posterior vaginal wall.

These representations are not fanciful, nor simply theoretical. I have more than once witnessed them in actual practice, and that too under the manipulation of those who had the reputation of being good obstetricians. I once, in consultation with such a physician, saw him apply the forceps, take his stand upon the foot of the bed, the patient lying lengthwise of the bed instead of across it, and without making any traction as the forceps lay adjusted, deliberately raise the handles toward the pubes, remarking as he did so, "we of course have got to pull in an upward direction in order to follow the curve," and as he did so, lift the patient's lower trunk full six inches from the bed. Inasmuch as the handles were elevated at an angle of only a few degrees above the plane of the bed, I concluded at once that the ends of the blades had caught on the posterior brim of the pelvis, while the shanks were bearing against the pubic arch. The intention was undoubtedly good, but the judgment of the mechanism of his work was dangerously poor, "Ab uno disce omnes." A large percentage of the profession know almost next to nothing of the mechanics of labour, either natural or instrumental. It is not enough to tell such men—otherwise excellent physicians—to make axis traction. The trouble is, that they have not the faintest practical idea of where the axis is, and let me say that even the expert is in need of some rules to give him his landmarks. How much more, therefore, do the former require them.

But to return to our subject. As between the dangers attending erroneous anterior and posterior tractions, it seems to me that it requires but little consideration to decide their pre-eminence with the former. Tractions against the perineo-coccygeal tissues are after all but a close imitation of the action of the womb which expels the child by pushing down upon the spinal column pointing directly towards the pelvic floor. The forward variation of the head upon the point of that column is the result of the combined action of the womb, the floor's resistance, and the comparative non-resistance of the vulvar opening. Likewise, even undue posterior traction will be attended with a similar result without danger up to a certain point, and that is when the head begins to crowd in the vaginal outlet. If the misdirected traction be then continued, the danger of laceration will of course be imminent. But few can be so stupid and foolhardy with this indication staring them in the face as to continue the traction in a perineal direction; it is too plain in its suggestions, and too forcible in its commands. Aside from this danger, the chief objection to erroneous posterior traction (which holds in a four-fold force against undue anterior traction) is, that the efforts of the obstetrician are proportionably neutralized, and the labour retarded. It is a universal law in mechanics that in forcing a body through a canal, the course to be followed is a line marked out and balanced by its opposing resistances. That line will be the resultant of the respective forces of those resistances. And now what is that line, beginning with incipient extension to the very outlet; and what if any are the rules by which it is to be followed? We have said that the indications furnished by that extension coming through the muscular sense, sense of palpation and sight, are that the handles of the forceps should be varied from the axis of the superior strait in an anterior direction.

That line to which we have just alluded—aside from its being a general curve, has no fixed boundaries for its greater part, nor are there as in the bony pelvis any fixed points in its environing canal, from which any measurement can absolutely define it. Every head traversing it must by its own peculiar dimensions vary it to a certain extent. It is, therefore, partly an ideal one. Nevertheless, like the solution of a simple problem on given conditions, it is readily found and followed by observing the two following rules: 1st, As we gradually raise the handles with the advancing progress of the head, frequent digital examinations should be made to determine the contiguity of either the shanks or proximal upper edges of the blades to the pubic arch, remembering that they should hug that arch without touching it; 2d (presupposing a proper forceps with snugly fitting blades so that the head will hold the forceps as well as the forceps the head), we should sensitively and implicitly follow the course suggested by the impressions or bearings of the handles against the hand.

These rules I consider unerring guides; if followed faithfully we need have no fear of going wrong. They exclude any dependence upon a fancied, theoretical curve which at best must be ever subject to each individual's judgment.

With the indications and rules in forceps labour thus hastily considered let us now turn our attention to the subject of forceps construction best calculated to fulfil them. In arriving at a decision let us take up in order the three typical forms of forceps which have been presented since the time of the Chamberlens. The Chamberlen forceps, it will be remembered, were perfectly straight in their longitudinal axis (with the exception of the cranial curve) from the tip of the blades to the tip of the handles. Can such a forceps fulfil the indications when the head is at the brim of the pelvis or in the pelvic excavation at an appreciable distance above the pelvic floor? This question may seem superfluous in the light of an almost universal dismissal of their employment since the time of Smellie and Levret. But let it be noted that no longer ago than when the International Medical Congress met in London, Prof. Lareswitch, of Cracow, "maintained that the only curve essential to the forceps was the head curve—the pelvic and perineal curves being not only unnecessary but mischievous; that the perineal curve is superfluous inasmuch as the perineum can be readily distended as far as the coccyx without injury, while the pelvic curve increases the resistance to the passage of the head, endangers the soft parts, and renders the power of making traction in the axis of the pelvis difficult if not impossible. Moreover, the direction in which traction should be made is decided by the muscular sense."

With the last clause of Professor Lareswitch I in a certain sense agree, as my preceding remarks have shown; I also think him correct in regard to the *pelvic curve* if he limits it to the relationship which it holds to the handles of the ordinary forceps; but when he maintains that the straight or Chamberlen forceps can fulfil all the indications in forceps labour better than any other I, and I think the profession generally, most emphatically dissent from him. I unhesitatingly deny that in a primipara or in a multipara (whose perineum has not been badly lacerated or enormously relaxed) the perineum can be forced back to the point of the coccyx without making it a powerfully elastic fulcrum whose action is to throw the anterior edges of the forceps forward onto the anterior parts of the pelvis and thereby endanger them. I hold that it would be dangerously difficult, if not wholly impossible, to apply such a forceps at the brim, when in order to get them properly adjusted the perineum has to be simultaneously forced backward by the handle, while the end of the blade is gouging its way along until it has plowed its adjustment to the side of the head. Again, supposing it possible, conceive them applied at the brim where, according to my showing, the traction should be made, in a direction all the way from fifteen to twenty degrees posterior to the axis of the superior strait, could the handles very well push back the coccyx too? Even if so, or in the unsuccessful attempt to do so, would not the perineal fulcrum thrust the head onto the anterior pelvic brim, and thus frustrate the object in view? According to Cazeaux "the extent of the perineum in its ordinary condition is three inches, viz., from the point of the coccyx to the anus there are one and three-quarter inches, from the anus to the vulva one and one-quarter inches." This three inches of strong, muscular, fibrous tissue it is necessary to thrust back until its whole extent is annihilated in order to reach the point of the coccyx before the blades of the Chamberlen forceps can be adjusted. This is impossible without inflicting a barbarous violence.

Were the perineum and the coccyx entirely out of the way, then we could have no better forceps, for then the longitudinal axis of the blades, and the axis of the presenting part of the cranium, and the axis of the superior strait, and the points of resistance and traction in blade and handle would all correspond and act in one general shaft line. This is all that could be desired, and this, let it be distinctly understood, is just what must be accomplished in any properly constructed forceps whose work has to regard the coccyx and the perineum in the place where nature has put them. In other words, a properly constructed forceps will not disturb or injure the perineum, nor will they in turn be interfered with by them, while they accomplish all that the Chamberlen forceps can do with the coccyx and perineum left out.

What of the working of the Smellie and Levret forceps—the ordinary straight-handled forceps having the cranial and pelvic curves? The invention of the pelvic curve undoubtedly grew directly out of the difficulty of applying the Chamberlen forceps when the head was not well down in and in the act of emerging from the pelvic excavation. That it greatly facilitates the introduction of the blades and their application to the head when it is appreciably above the pelvic floor, there can be no dispute. Herein consists their chief merit, and it is no small one. In the hands of an accoucheur skilled in the mechanism of forceps labour, and when only comparatively weak tractions are required, the instrument can be used to great advantage. But where the conditions are such in one instance, there are twenty at least where they are the reverse. In order that such a forceps shall be manipulated with efficiency, and without danger to the mother or child, it is evident that traction must not be made in a line corresponding to that of the handles. If there be any one point in forceps delivery that is clearer or more settled than another, it is that of axis traction. Traction, therefore, in a line of the handles of such a forceps is a transgression of this plain mechanical law.

At the last meeting of the American Gynæcological Society held in September, in this city, Dr. Albert H. Smith, of Philadelphia, made the subject of axis traction the theme of his paper. He gives credit to Ojeander, of Göttingen, in 1799, for being the first to call attention to this subject. The *Medical Record*, in an abstract of his paper, makes him say, that it is essential that pressure should be made downwards upon the lock of the instrument in a line parallel with the axis of the superior strait or the strait of that portion of the pelvis in which the head of the child is engaged, and at the same time upward leverage made with the other hand on the handles of the forceps. This was the principle enunciated by Ojeander, and it was that which Dr. Smith believed all obstetricians would adopt sooner or latter (mark the admission that such a practice has never been and is not now carried out by the profession as a whole). He emphatically affirms that axis traction can be made in this manner by the ordinary forceps. Whether or not we agree with him on this point, we see that he makes a strong and sensible advocacy of the necessity of axis traction—the unavoidable inference of which is that the general longitudinal axis of the blades shall coincide with the pelvic axis, and that traction in a line of the handles is positively to be avoided.

The validity of this position no one can gainsay. But it is all very well and it sounds very plausible to insist upon what should be done with the ordinary forceps, without considering for a moment the question of their capacity of application in all cases, or giving one single rule whereby one may positively know that the blades are axially applied, or even if one did know, how he is to be sure that he is making a pressure on the lock "*exactly*" in the direction of the plane of the pelvic axis with one hand, and exactly antagonizing such a pressure by a counter one with the other. Could two persons of even acknowledged skill be selected who would manipulate the ordinary forceps with anything more than a general approximation to what is represented should be done with them. All forceps of the ordinary variety do not have the same pelvic curve. What but a vastly variable judgment in the great army of accoucheurs is to decide as to the axial line—and hence the axial application and subsequent axial traction of these different forceps? How varied are the pelvic positions of the patient whereby the brim and axis are changed, and who, whether he be expert or otherwise, can be guided by anything more than a general *guess* as to the direction of traction? How far back must the handles be carried in order to have the blade properly applied to the head at the brim? How much allowance is to be made for the fulcrum force of a rigid perineum? If due regard be paid to that condition is it not almost certain that the blades will be applied diagonally across the pelvic excavation and not in a line of the pelvic axis? If under such circumstances the rule of Dr. Smith to depress the blades when making traction in a direction of the pelvic axis be carried out, who does not see that they will be very likely to slip from the head and impinge with their posterior edges upon the sacral portion of the pelvis?

In cases of easy delivery, in consequence of ample pelvis or proportionately diminutive head, Ojeander's rule may work tolerably well. But in difficult cases of labour, depending upon a proportionately small pelvis, a large head, or malposition, this leverage and fulcrum action of the forceps — this double-hand antagonism robbing traction of its needed force—proves not always a safe procedure, and in but too many instances an inefficient one. The accoucheur initiates his delivery by an attempted accordance with the rule, uncertain and indefinite though it is; but he soon finds that he needs all of his strength, without any to spare for antagonizing, to pull with the index and middle fingers in the rings or on the crossbars, which nearly all who have devised forceps after the ordinary variety have provided for this purpose. Traction then is shifted from the line of the pelvic axis to that of the handles. What is the consequence? Why it is plain! that the concave edges of the blades are pulled more or less directly against the pubes. The more curved the blades the more they hook around the pubic bone, and hence the greater the resistance to the progress of labour. No matter how far back the handles may be depressed, although varying them in that direction facilitates matters much better than by varying them frontward, yet the strictly handle line traction must tend to force the head against the pubes and away from the pelvic axis. Is it strange that labour is difficult, painful, and dangerous under such circumstances? Is it strange that we occasionally have a separation of the symphysis pubis?

The next and last variety of forceps under consideration is that with the cranial, the pelvic, and perineal curves combined. The perineal curve given to the ordinary forceps by Tarnier, by some of late accredited to another, I consider of vast importance if properly utilized. Just exactly what useful end it subserves in the apparatus given to us under the name of the Tarnier forceps I confess my inability to see. The Tarnier forceps are neither pulled by their handles properly so called, nor is traction made from anything attached to those handles. They are simply used for the purpose of adjusting the blades, and binding them to the head. If Tarnier had contented himself with simply bending upwards the blades of the ordinary forceps to about double the angle which they now hold to the line of the handles, they would have subserved precisely the same purpose and end of those which he has given us. Inasmuch as with them traction is made with separate rods, hinged to the blades, while the handles are purposely allowed to freely oscillate with the movements of the head, it matters little, so far as I can see, whether the shanks be bent so as to lop over the perineum or remain in the same kind of relationship which holds between the blades and the handles of the ordinary forceps. But, as remarked before, if properly utilized, either for the purpose of allowing traction to be made by the handles direct, as with the ordinary forceps, or, far better still, of furnishing a hold in the handles from which an attached handle descending to an axial point may be made use of, and giving such a relative direction to those handles as to make them a positive, not an uncertain, index as to just where the blades are in the pelvic track (both of which all-important advantages I have endeavoured to achieve in the forceps which I have devised), then the perineal curve becomes of vast consequence. Thus environed it enables the blades of the forceps to be applied to the head in axial line at any point from the pelvic brim to the pelvic floor, without either disturbing the perineum or being in turn disturbed by it, and renders the forceps virtually straight, thus enabling them to be drawn open always in axial line, and wholly obviating the necessity of wasting strength and puzzling the judgment by the antagonizing, double-hand leverage action, so necessary in the ordinary forceps. Surely no one but a prejudiced theorist, or a blind devotee to the antique, or a babe in mechanics, can object to the perineal curve under such circumstances.

Objection has been made to the perineal curve on the ground that in case of slipping, the soft parts, and especially the perineum, are in far greater danger of being wounded than with the ordinary forceps. But allowance must be made for the indulgence of this idea when it is remembered that it seems next to impossible for many in the profession to think of the perineal curve in any other relationship than that in which it is exhibited in the Tarnier forceps. In that relationship—in other words, at the mercy of Tarnier's traction rods—I readily subscribe to the prevailing idea. But shorn of those adjuncts, I seriously doubt that the perineal curve can be attended with any more, if as much danger as the ordinary forceps when they slip. When forceps slip and lacerate the perineum, they inflict the injury by their sudden expansion, coupled with the backward pressure of the perineum, and not by the cutting posterior edges of the blades as many suppose. If this be the case the advantage is with the forceps having the perineal curve, for they exert no pressure on the perineum, and their expansion can be no greater than that of the ordinary forceps.

In regard to the question of the liability of slipping as between the ordinary forceps and those having a perineal curve, again I think most decidedly that the latter have the advantage. Aside from the prevailing fault of undue elasticity, which, in order to make a just comparison, must be ascribed equally to both kinds of forceps, the reason why the ordinary forceps are more liable to slip than those which have the perineal curve, is because of the difficulty and uncertainty of making axial application with them, and even if made the impossibility of making axial traction in all difficult cases, as I have shown, and these are just the cases where slipping is most liable to occur. But by way of digression on this question of slipping let me say that no forceps should be constructed so as to entail the curse of the infernal qualities of watch-spring blades and whalebone shanks. The perineal curve in a forceps constructed with a due regard to strength sufficient to make the blades stay where they are adjusted, will, because of axial application and traction, never be likely to permit slipping, even though subjected to a traction force twice as great as that ordinarily exerted to make the common forceps slip. Now this construction consists not in thickening the blades for at least two-thirds of their distal extremities, but in limiting it to their proximal ends and the shanks. The little bulk here added cannot in the least encumber the pelvic canal.

Leaving now the perineal curve, the next feature of the Tarnier forceps to which we will turn our attention, and one which seems a necessary accompaniment, where the blades are drawn by traction rods or by some other device than the handles, is the *binding screw*, by which the blades are immovably fixed *after* adjustment to the head. Fault has been found with this arrangement on the theoretical ground that the head might thereby be unduly and dangerously compressed. Never was there a more egregious error committed than by the entertainment of this notion. Those who indulge in it have no idea as to its proper use and management. Under such circumstances it is infinitely superior to the *hand* management of the ordinary forceps, in which pressure is left entirely to the decision of a judgment oftentimes greatly unbalanced by the fear of the forceps slipping. Guards against undue pressure by the old forceps, either in the shape of the resisting bar, intervening napkin, etc., are very unreliable and useless things in the great majority of cases. They are for the most part practically discarded, and the obstetrician knowing that compression must be made commensurate with the amount of resistance, and whether fearful of the slipping of his forceps or not, being compelled to make pressure by the very act of traction, he is naturally led to make more compression than is necessary, and the result is the mutilated heads which we so often witness. The use and management of the binding bar are as follows: The blades having been adjusted to the head the handles are approximated by the hand with a force which the judgment can readily decide is safe and sufficient to make inelastic and unyielding blades stay where they are put (and none but such are fit for use), and then the bar is simply set by its screw. This binding remains only during the period of making temporary traction. When it ceases the pressure of the blades is immediately taken off by unfixing the screw with a simple turn or two, and throwing out the bar, when perfect rest is afforded during the intervals. When tractions are again to be made, the bar is instantly thrown into its notch, where, with a reversed turn or two of its screw, it is again set as before, only to be unadjusted at the cessation of the temporary traction, and so on to the end. By this means, one guided and guarded by undisturbed judgment, danger from undue compression is efficiently warded off rather than incurred.

But the great and peculiar features of the Tarnier forceps are the traction rods. So far as I have been able to learn, these traction rods were designed to have in view for their chief object the freedom of the handles, in consequence of which they might serve as an index to the progress of the head through the pelvic canal, and suggest the directions in which tractions should be made. In other words, a pointer or bowsprit fixed to the child's head, moving under an uncontrolling, and, therefore, uncertain power, was to take the place of muscular sense and the brain, and so be the dumb indicator, the sign guide of just where to pull. From the first they were looked upon with suspicion, and the instinctive impression has grown into a conviction enforced by experience, that they are both useless and dangerous. The *pushing* of the fœtal head through the pelvic track by uterine contractions, whereby flexion is made at the brim in most instances, and maintained until the bony part of the pelvic floor is reached, when extension begins *is one thing*, and it is the one natural thing to be imitated; but it is quite another where the head is *pulled* through the same canal by an instrument which has no controlling or guiding power as to the direction to be pursued. When forceps are applied above the pelvic floor, and especially at the brim, they seize the head in a state of flexion, and this condition should be maintained if possible by the proper guidance of the forceps.

The hinged rods of Tarnier permit no such governing power. By a possible faulty application of the blades, a not exactly proper presentation, and certain unlooked-for resistances, the head may be made to begin extension too soon, and thus a vertex may be converted into a face presentation. The possibility of their doing this is not based on theory alone. A distinguished physician and obstetrician in this city told me, some six or eight months ago, that this accident had occurred twice to his positive knowledge under the employment of the Tarnier forceps. Another danger is the possibility and great probability of their slipping off the head during a quick rotation or a sudden extension (all the more likely to happen because of this hinge-movement) in consequence of which the sudden exit of such a complicated vaginal derrick would be likely to inflict serious harm to the perineum. But apart from these dangers, I consider the traction rods useless. 1st, they are useless as furnishing an index to what should be the proper movement of the head in its descent, as we have just shown, inasmuch as the upward movements of the handles may mean chin progress and occiput retrocession rather than natural extension and descent of the head along the curve. 2d, they are comparatively and especially useless in trying to fulfil the great indication of making traction in a line of the pelvic axis (since this end can be obtained in a far simpler and surer way). Dr. Smith says, that "by making traction blindly" (you see he considers the handle-index utterly useless), "the Tarnier forceps cannot do what it proposes to do—make axis traction at all." Had Tarnier not been so enthusiastically led away with the idea of the moving handle-index—which idea was the conceiving mother of the rods—he undoubtedly would have given to the profession an excellent forceps. By the downward bend of the proximal end of the traction rods he evidently intended to make the point of traction in a line coinciding with the long axis of the blades. Now, if he had, instead of attaching hinged rods to the blades, attached a fixed handle to the lock, descending to a point which would fall on the line coinciding with the longitudinal axis of the blades, he would have accomplished this intention. It is evident that the force of traction can be transmitted as well through such an arrangement as through the dangerous and uncertain traction rods, and because the points of traction and resistance, and the blade axis must necessarily thereby act in one line, and can therefore always be under the absolute knowledge and control of the operator, such an instrument must necessarily be vastly superior in execution, and infinitely freer from danger.

It is such an instrument as this which, in the main, I now offer to the profession. Some two or three years ago, when my attention was particularly directed to the Tarnier forceps by an article in the American Obsterical Journal, from the hand of Dr. Fordyce Barker, I was instantly struck with the uselessness and danger of the traction rods, and immediately set to work to devise a forceps which, upon a somewhat extensive trial within the past year and a half, not only in mine, but in other hands, have proven themselves capable of doing all that the Tarnier forceps possibly can do, while they do far more, and that without complication or danger. They can scarcely be said to be a modification of the Tarnier forceps, for although I have borrowed from them the perineal curve and the binding bar, yet their action is based on entirely different principles, while the relation which the handles hold to the blades and both to the pelvic planes under an observed rule which renders the direction of the handles a certain index as to just where the blades are in the pelvis, surrounds them with features which will hardly entitle them as a Tarnier modification. A description of them will perhaps be best understood by beginning a detail of their construction from the ordinary forceps as a foundation.

Conceive of the blades of the ordinary forceps to be curved up or rather bent up on their shanks, so that an average line of the blade and the bend shall be at an angle to the line of the handles of about forty-five degrees—the average bend of the ordinary forceps being about twenty degrees—then conceive of a backward or downward bend of the shanks at about their middle, or at such a point as will make the line of the handles perfectly parallel to the longitudinal line of the blades and two inches from it. In this double bend you get a perineal curve of exact dimensions, the special object of which is, besides the non-interference with the perineum, to enable the line of the handles, when brought in coincidence with the pubic plane, to indicate that the axis line of the blades is in coincidence with the axis of the superior strait. It has already been shown that the plane of the pubis is at right angles to the plane of the brim or superior strait, and hence must be parallel to the axis of that strait. It is only necessary, therefore, with such a constructed forceps, on applying them to the head anywhere above the pelvic floor, to bring the handles to the plane of the pubis (which is parallel to the general vulvar plane) in order to positively direct the blades in the axial line of the brim. Now it is the easiest thing possible to determine the general plane of the pubes, all that is necessary is to place the index finger on the upper edge and the thumb on the under edge of the pubes, and its plane is seen at a glance. The other and distinguishing feature of my forceps, is a shaft adjustable to a button on the under end of the lock-post descending obliquely to the traction line, which is only a prolongation of the axial line of the blades, and terminating in a ring through which is passed transversely a wooden handle similar to, but shorter than that of Tarnier. No one can dispute the advantage of such a handle, both as regards the economy of strength to be laid out, and the efficiency of traction to be made, for by it tractions can be made on the blades just as they should be made, viz., in a line with their axis and that of the pelvic axis, without at all disturbing the perineum or being disturbed by it, thus making them virtually a straight forceps with all of their acknowledged advantages.

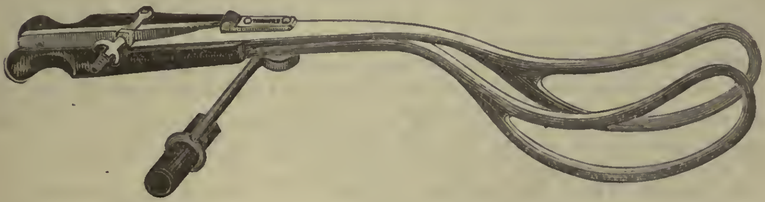
Although the lock is peculiar and of easy adjustment, yet no special claim is made for advantages over those of other forceps. There are some features of the blades and shanks which differ from those of the generality of forceps, and which I claim should enter into the principles of forceps construction :—

1st. The blades are of more than the ordinary width, and possess a more decided concavity, both transversely and longitudinally. They are thereby enabled to grasp the head with a hug which is distributed generally and evenly over the cranial surface, from their tips to their junction with the shanks, by which means an undue pressure on any one point is avoided, an upward or downward tendency to glide from the cranial convexity is prevented, their central rotary action on the sides of the head as pivotal points is guarded against, and lastly the muscular perception is greatly conduced to by the firmer bearing of the handles, indicating thereby the course which the head is naturally pursuing.

2d. The proximal ends of the blades and the shanks are stiffer than in the great majority of forceps. They are such as to allow of almost no separation within the bounds of any reasonable traction. Limber forceps are simply barbarous, they not only do no good but they slip off and bruise the head and lacerate the perineum, and if by the prudence of the obstetrician they are prevented from doing this, they slip just far enough to concentrate all the bearing or pressure on the tips of the blades, and thus convert them into gouging or cutting instruments.

The binding screw is, in all essential respects, the same as Tarnier's, and hence needs no comments.

Fig. 2.



Such is the instrument which I would offer as possessing many and material advantages over both the forceps in ordinary use and those of Tarnier. If they are used in accordance with the rules which I have endeavoured to lay down in regard to the mechanism of forceps labour, I am sure that not even the tyro can go astray, while I am equally sure that the expert will appreciate them as an efficient aid.[1]

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[1] These forceps can be obtained of Phillip H. Schmidt, 1311 Broadway, New York.

ARTICLE VIII.

TWO VESICAL CALCULI WITH NUCLEI OF BONE, RESULTING FROM A GUNSHOT WOUND.

By J. M. BANISTER, A.B., M.D., Assistant-Surgeon U. S. Army, Post-Surgeon at Fort Reno, Indian Territory.

IN the *American Journal of the Medical Sciences* for October, 1880, under the heading "Lateral Lithotomy, with the Successful Removal of a Calculus and Seven Pieces of Necrosed Bone from the Bladder of an Indian Scout, Nineteen Months after the Reception of a Gunshot Wound," I attempted to give the history of a very interesting case of gunshot wound of the rectum and bladder, involving the pelvic bones, which had a short time before been under my charge.

Recently, I have been so fortunate as to secure the bladder and its contents from the patient in question, and my object, in again bringing this case to the notice of the profession, is to give a short history of the patient prior to his recent death, and to describe the exceedingly interesting pathological specimens removed at the *autopsy.*

In order that the links in the chain of the history may remain unbroken, I think it well to give a brief *resumé* of the earlier history of the case, trusting, however, that the readers of the present article will refer to my report as originally given.

Chauch, or Chalk, an Arapahoe Indian, 30 years of age, was wounded in battle near Fort Supply, I. T., September 13, 1878. "The ball, after penetrating the saddle-tree, entered the right natis, passed through the pelvis, wounding the rectum and bladder, and made its exit just beneath the left pubic arch, carrying away a small portion of the arch, and wounding the left epididymis and scrotum. For many weeks feces and urine passed through the posterior wound, or wound of entrance. There was a little infiltration of urine into the scrotum, and it was at one time enormously distended with fecal gases. *Splinters of bone* were discharged or extracted, from time to time, from the wounds of exit and entrance, and on one or two occasions *fragments of wood were expelled per urethram.*" The attending surgeon, Assistant-Surgeon T. E. Wilcox, U. S. A., was never able to detect any foreign body in the bladder.

In January, 1879, the patient returned to his tribe wonderfully improved; all wounds had healed, and feces and urine were passing through the natural channels. In the following July he suffered from a very obstinate attack of cystitis, the result it was supposed of the gunshot wound of the bladder. He habitually passed an abnormal amount of urine, and constantly suffered from the passage of bits of necrosed bone *per urethram.*

Upon February 29, 1880, the patient came under my care suffering from most distressing symptoms of cystitis, and his general condition was pitiable in the extreme. His urine was abnormally increased in quantity; was of an offensive ammoniacal odour, and strongly alkaline in reaction; was constantly loaded with mucus and pus, and frequently tinged with blood. There was no trace of phosphates, and no albumen. Micturition was increased in frequency, and almost each act caused the greatest agony from the passage in the urine of bits of necrosed bone; his suffering from this cause was almost continuous from this date until that of the operation two months later. Only a hasty exploration of the vesical cavity was, under the circumstances, deemed expedient, but by its means was demonstrated the existence of a foreign body in the fundus of the organ.

Upon April 25, 1880, the operation of lateral lithotomy was performed as a last resort. A calculus and seven pieces of bone were removed, and one encysted calculus, which resisted every effort at dislodgment, was left *in sitû*. The patient recovered from the operation without a bad symptom, with the exception of a slight intercurrent attack of pleuritis, and not quite three months later, returned to his people cured as far as the bladder was concerned, making, of course, due allowance for the presence of the encysted stone, from which he was suffering no inconvenience. The calculus and bone fragments removed were presented to the Army Medical Museum, their numbers being 7020 and 7021 in the "Surgical Section." A full description of these specimens can be found in my article before referred to.

I shall in passing, call the reader's attention to the *passage per urethram of fragments of wood* shortly after the patient was wounded, and shall only remark that I have never been able to find a similar occurrence recorded in the history of military surgery.

I shall now give the subsequent history of the case.

After the departure of my patient from the hospital July 18, 1880, I lost sight of him until March 26, 1881, when at his request, I visited him in his camp and found him again suffering from severe bladder symptoms. I was informed that he had been in this condition for nearly two months; at his own request the patient was removed to the Post Hospital, Fort Reno, I. T., and, upon sounding the bladder the following morning, I at once detected the presence of a calculus. The urine was then subjected to a thorough chemical and microscopical examination, and no contraindication being discovered, I determined to perform a second lithotomy as soon as the patient's condition could be sufficiently improved. He was at once put upon supporting treatment, and attempts made to mitigate the vesical symptoms by the usual measures. After a two weeks' continuance of this treatment, the patient's condition was sufficiently improved to justify the operation, but when the subject was mentioned to him he positively refused to give his consent. His immediate family and friends, from some superstition of theirs, also vehemently opposed the operation and finally insisted upon carrying him back to the camp.

About a month later, the patient was brought back to the hospital in a dying condition; no idea of surgical interference was now, for an instant entertained, and the patient's expected death occurred May 13, 1881, the sixth day following.

I was very desirous of holding a thorough post-mortem examination, and securing the bladder, kidneys, and pelvic bones, but the Indians maintained such a close watch over the body that the first mentioned viscus could alone be obtained.

The necessary dissection at the *autopsy* was performed by Acting-Assistant-Surgeon, W. W. Hall, U. S. A., to whom I am much indebted for his valuable assistance. The bladder and its contents proved a full recompense for the trouble taken to secure them, and I shall now describe these very interesting specimens, first referring the reader to the description of the course of the ball, as above given.

Upon opening the abdominal cavity and exposing the pelvic viscera *in sitû*, the bladder was found firmly bound to the rectum by inflammatory adhesions, and likewise adherent in front to the left pubic bone, close to the symphysis, and at a situation corresponding to the point of exit of the ball, as well as to the location of the encysted calculus discovered, and left in its sac, at my operation a year before. So hurried was the removal of the bladder that, under the circumstances, it was necessary to separate this organ from its pubic attachment, and impossible to remove more of the rectum than that portion before mentioned as attached by inflammatory adhesions to the vesical wall. On the mucous surface of this piece of bowel could be seen the well-marked cicatrix of the old wound, and upon opening the bladder and examining its posterior wall, an exactly similar scar was plainly visible at the same situation, the two viscera *being firmly bound together at this point.* Two very interesting calculi were found occupying the vesical fundus; the sac of the stone formerly encysted was empty. The bladder wall was thickened, and its internal surface presented the characteristic "retiform arrangement" due to hypertrophy of the muscular fibres, a condition so commonly found in cases of long standing inflammation of this organ. No evidence of present necrosis of the pelvic bones was discoverable.

The calculi discovered in the vesical cavity proved of the greatest pathological interest. The larger of the two, evidently, from its shape and size, the one left encysted at the lithotomy in 1880, was ovoidal in shape and weighed 244 grains Troy; its surface was thickly coated with crystals of ammonio-magnesian phosphate.

Upon sawing through this calculus, I discovered a well-marked *splinter of bone playing the part of a nucleus*, while the mass of the stone was composed of phosphatic matter arranged in concentric layers.

The smaller body was more irregular in shape, was also coated with crystals of ammonio-magnesian phosphate, and weighed 77½ grains Troy. Its mass was found to *consist chiefly of necrosed bone*, around which was its phosphatic envelope.

An interesting subject for investigation, in connection with these two specimens, is the probable source of the bone fragments forming their nuclei. It has been stated above that the situation of the encysted calculus, discovered at my operation in 1880, exactly corresponded to the point of exit of the ball, and that at the *autopsy* (in May, 1881) the anterior wall of the bladder was found adherent to the pubic bone at the same point. It is probable, therefore, that the nucleus of the larger stone had the following origin. The wounded anterior wall of the bladder having, in consequence of the inflammatory process, become adherent to the injured pubic bone, a splinter, chipped or possibly exfoliated from the bone in question, remained in the wound and served as a nucleus for the phosphatic deposit. This stone had evidently been liberated from its sac by the ulcerative process, and had dropped into the bladder fundus some months before the patient's death.

In the case of the smaller formation, the origin of the nucleus cannot be so definitely traced. It could not possibly have remained in the cavity of the bladder at the conclusion of the lithotomy *a year before*, as every precaution was then taken to avoid such an oversight, and at the time of the patient's departure from the hospital, he was suffering from no symptoms referable to such a cause. It is very probable, therefore, that, like the bone fragments removed at the lithotomy, it made its way into the bladder by ulcerative absorption, having in the first instance been splintered from the sacrum and driven by the force of the ball into the bladder-wall; that it was not a *recent exfoliation*, was proved by the absence of signs of present necrosis affecting the pelvic bones, as discovered at the *autopsy*, and by the non-existence of fistulous tracks.

This fragment, then, was occupied in effecting its entrance into the bladder for more than two years, but the length of time required does not overthrow the theory above advanced, as a number of cases in the history of surgery will prove. In Case 802, "Medical and Surgical History of the War of the Rebellion, Part Second, Surgical Volume," page 274, a bullet effected its entrance into the bladder five years after the reception of a gunshot wound of the abdomen.

Private George L. Schrimp, Co. C, Palmetto Sharpshooters (Confederate Service), was wounded at the second battle of Manassas, August 30, 1862, the ball "entering the body about an inch to the left of the spine, and about two inches below the last rib, and penetrating the cavity of the abdomen." Upon October 20 he was furloughed, returning to his home, and in March, 1863, rejoined the army and served until the close of the war. Upon May 28, 1867, while ploughing in the field, "he felt something drop somewhere in his abdomen," and began to experience symptoms of severe irritation of the bladder. The patient then came under the charge of Professor F. T. Miles, who sounded the bladder, discovered a foreign body, and on August 3d, 1867, successfully performed the lateral operation for stone, removing thereby "an ounce ball," one-sixth of the surface of which was thickly encrusted with phosphatic matter. In his report of the case, Professor Miles, in answer to the question, "How did the ball get into the bladder?" gives the following opinion: "The only rational explanation is that the ball perforated the external coats, pushing the internal before it, without producing any solution of continuity in that coat, thus preventing any escape of urine until the outer tunics united and closed the opening. The ball was suspended in the wall of the bladder by the invaginated mucous membrane for nearly five years. By its weight it probably induced absorption of the thin membrane, and wore its way gradually through by attrition, until it dropped into the bladder. The deposit on the ball shows that a portion of the ball was exposed to the urine long before it dropped into the bladder."

It is no doubt needless to remind the reader of the great interest naturally excited in the mind of the military surgeon by such a pathological curiosity as a calculus with a nucleus of bone resulting from a gunshot wound, and I shall therefore merely mention that from the whole number of bladder wounds occurring during the "War of the Rebellion," only three such instances resulted.[1]

These instances occurred in the practice of Dr. W. C. Livingston, of New York, Dr. C. Terry, of Columbus, Georgia, and Dr. Hunter McGuire, of Richmond, Virginia, and can be found chronicled in the Second Surgical Volume of the "Medical and Surgical History," the number of the cases being respectively 805, 806, and 807.

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[1] See Medical and Surgical History, War of the Rebellion, Second Surgical Volume, page 268.

Surgeon G. A. Otis, U. S. A., the late talented compiler of the "Surgical Records" in the Surgeon-General's Office, thus remarks upon these three cases: "Although Hennen declares calculous formations about bones to be common after shot-wounds, published examples are not numerous, and the three instances resulting from the experience of the war are of unusual interest."[1] A complete list of all on record can be found in Note 3, "Medical and Surgical History of the War of the Rebellion, Part Second, Surgical Volume," pages 276 and 277. In examining this list, it will be seen that of the *twenty-one instances of vesical calculi with nuclei of bone* therein recorded, *fifteen resulted from gunshot wounds*, while the remaining *six* occurred in *civil practice*, and *not* in consequence of such injuries.

Upon the authority, therefore, of the "Medical and Surgical History of the War of the Rebellion," the case described in the present article is the *fourth instance* of "calculous formations" about bone fragments occurring in the United States, in consequence of gunshot wounds of the bladder, and the *sixteenth* on record in the history of military surgery in all countries.

The calculi and bladder obtained in the present instance have been donated to the Army Medical Museum at Washington, the numbers of the specimens being respectively 7074 and 7075 in the "Surgical Section."

ARTICLE IX.

THE INFLUENCE OF METEOROLOGICAL CONDITIONS UPON THE CAUSATION OF CROUPOUS PNEUMONIA.[2]

By AUGUST SEIBERT, M.D., of New York.

IT is a well-established fact that the weather, or, to speak more definitely, certain states in the meteorological condition of the atmosphere, have a marked influence upon some of the organic functions of the human body. That this influence is able to cause disease is maintained by some, admitted by a few more, and denied by most authorities. In fact we may term this influence a public secret, nolens-volens known to all, yet hardly nearer its explanation now than in older times, in spite of our better knowledge of the particulars pertaining to meteorology.

The well-known and proven researches and investigations showing the influence of different weather upon the human body in health (as particularly mentioned in Weber's "Klimatologie," Ziemssen) as well as in disease, allow us to logically infer that the same influences are brought to bear upon the causation of acute pathological processes along the respiratory tract, acting as pioneers to the true generators of disease.

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[1] See Medical and Surgical History, War of the Rebellion, Second Surgical Volume, page 276.

[2] Being an Abstract of a Paper read before the Society of German Physicians, May 1, 1881.

For some time past my attention had been called to the greater number of cases of croupous pneumonia, brought to the Department for Diseases of Children in the German Dispensary of New York City, during and after certain kinds of weather. The negative result gained by an inquiry into the literature touching this subject induced me to try and, if possible, gain some certain knowledge regarding this phenomenon. A survey of the leading published opinions on this subject reveals the fact that the "catching-cold" theory has been of late replaced by an extreme scepticism regarding even the smallest meteorological influence upon the origin of croupous pneumonia! The reason for this fact may be found—

1. In the general acceptance of the doctrine of infection.
2. In the experience with cold baths.
3. In the one-sided and defective reports concerning certain climates and their inhabitants.
4. In the want of exact and thorough investigations, which give not only the influence upon the origin of pneumonia of each constituent of the weather *separately*, but also and chiefly the *combined* influence of *all*.

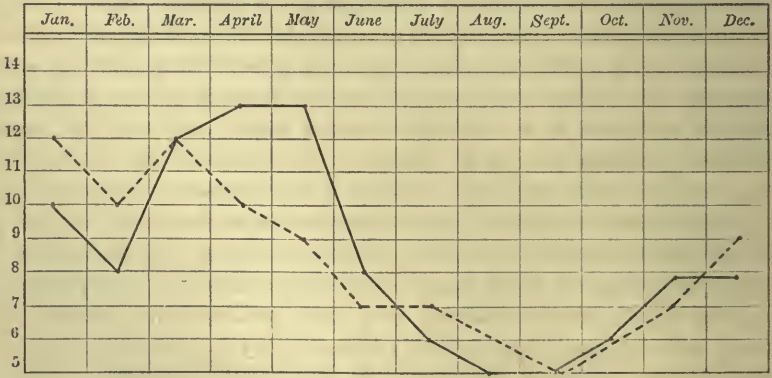
Notwithstanding this drift of leading opinions, even the most radical sceptics do not fail to discuss the probability of a meteorological influence upon the origin of pneumonia in their chapters on this disease, but of course only to arrive at the conclusion that none whatever exists. Thomas (in Gehrhardt's "Handbuch der Kinderkrankheiten, vol. iii. p. 597), for instance, remarks: "Pneumonia is most frequently found during winter and spring," and "this fact entitles us to assume that the prevalence of rough winds, which are also found during autumn, cannot be of marked influence upon the frequency of croupous pneumonia among children."

Juergensen (in his "Ætiologie der croupœsen Pneumonie," Ziemssen) coincides with Thomas in holding that the disposition for pneumonia is entirely different from that for catarrh of the respiratory tract. It is to be wondered at that Juergensen, as proof against the possibility of weather-influence, gives a series of interesting facts, gathered with zeal and care, showing that persons whose calling compels them to expose themselves daily to all kinds of weather (like farmers, sailors, soldiers, and Arctic explorers) are less liable to be afflicted by this disease than such persons who, by their mode of living, are more or less confined to an in-door life (as inhabitants of prisons, hospitals, convicts and soldiers in barracks). To me these statements appear as a strong proof of the weather-influence upon pneumonia, for we all know that persons accustomed to exposure to weather are by far less sensitive to it than such who live secluded, for these, when exposed, will be doubly influenced by it. Further, we know that old age, as well as extreme youth, predisposes to pneumonia, not to forget its frequency among convalescents. Thomas admits that children accustomed to exposure to fresh air are by far less liable to be afflicted by this malady than those confined to closed rooms and poor ventilation. In speaking of a possible influence of the weather, Juergensen goes over its constituents *separately*, arriving at the conclusion that the sudden falling of the barometer "might possibly favour the origin of pneumonia," for "it appeared to him so." The sudden change of temperature "may be" of a limited influence according to the same authority, a conclusion gained by comparing monthly returns—a no doubt easy but somewhat too summary method of working to be of value.

These examples show sufficiently that the leading deductions regarding this important question are arrived at by very superficial investigations. Nowhere have I been able to find even a quotation considering the combined influence upon this disease of the temperature, the humidity, the atmospheric pressure, and the direction and velocity of the wind; not even one sentence could I find in which even two of the weather-constituents were mentioned together in this relation. Yet we know that the physical and pathological influences of the weather-constituents can absolutely *not* be held apart if we intend to be in any way exact and scientific in our investigation. The reasons for the absurdity of separate investigation are ably pointed out in Weber's "Climatologie," in the same work of Ziemssen.

Those authorities adverse to the possibility of a weather-influence try to prove their assertion by claiming that the frequency of pneumonia is very different from that of catarrh of the respiratory tract during the different months of the year. The figures drawn up for this purpose are not very convincing, however. Take, for example, Juergensen's chart on this subject, representing the frequency of pneumonia and that of catarrh as found during twenty-five years in the "Allgemeines Krankenhaus" at Vienna (*vide* chart No. 1). Any one looking at the two lines of this

Chart 1.[1]



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[1] In charts 1 and 2 the pneumonia cases are represented by the continued line, and the catarrhal bronchitis by the dotted line.

Chart 2.

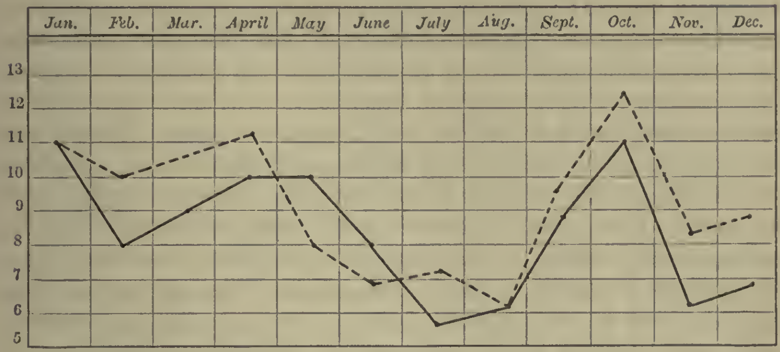


chart with an unprejudiced eye cannot fail to find their similarity remarkable and striking, considering the conglomerated material they represent. To bring a counterpart to this chart, I have gathered all cases of pure croupous pneumonia and all of pure bronchial catarrh treated at the Department for Children's Diseases, in the German Dispensary, New York, during 1878, 1879, and 1880. The lines representing these cases give chart No. 2. Though at the first glance the similarity of these lines seems to be small, yet any one will admit that their *direction* varies seldom and not oftener than in chart No. 1. The main difference lies in the more eccentric running of the line representing catarrh. The by far steadier and less pointed character of the pneumonia line not alone indicates the less frequent occurrence of this disease, but also seems to show that the same or kindred meteorological influences tending to aid the breeding of the two diseases must have been brought to bear more heavily and during a longer period upon the tissues affected with pneumonia than on those of catarrh. A comparison of the mortality statistics of New York City for the last three years shows that pneumonia, bronchitis, and diphtheria give chart lines very similar to those of chart No. 1. Want of space and the minor importance of mortality figures prevent the reproduction of these charts.

It is not my object to prove that catarrh and pneumonia are the same disease, only differing in location and intensity (though C. Veraguth (*Virchow's Archiv*, Bd. lxxxii. Hft. 2, 1880) has recently shown, by injecting a solution of nitrate of silver into the trachea of animals, that the same cause can produce both diseases, the difference being in the length of time allowed to the agent to work upon the tissues); but I do maintain that a marked meteorological influence is brought to bear upon the causation of pneumonia as well as on that of catarrh, and that the meteorological conditions exercising this influence are in both diseases so nearly related to each other as to almost be identical.

For the purpose of detecting the *nature* of this weather-influence, I have made the following investigation: 600 cases of croupous pneumonia, in children under 14 years of age, were collected, all of them having been treated at the German Dispensary during the last three years, and mostly under my own observation. As a matter of course, I observed the greatest precaution in the selection of these cases, so as only to get such as were not complicated with or did not follow other diseases. For my purpose the cases were good, since all of the small patients were children of poor people, living in tenement houses of the city—districts usually termed the German East Side. The advantages of such cases for statistical investigation are evident, as the same age (two-thirds were under three years of age), the similar mode of living, the poor hygienic surroundings, the same kind of dwellings, and, last but not least, the comparatively small space in which these cases developed themselves, made them extremely well adapted for my purpose. The cases were arranged according to the date of their reception in the dispensary.

In answer to a written request to the Chief Signal Service Officer at Washington, that gentleman placed the official reports of the New York Meteorological Station at my disposal, in the most kindly and encouraging manner; so I was enabled to copy these reports for every day of the years 1878, 1879, and 1880. My notes contained the following for each day of the three years mentioned:—

1. The mean barometer. 2. The mean humidity. 3. The maximal temperature. 4. The minimal temperature. 5. The mean temperature. 6. The direction of the wind. 7. The maximal velocity of the wind. 8. The amount of snow or rain.

By examining the meteorological phenomena of the three days prior to the reception of each of the above 600 cases of pneumonia at the Dispensary *separately*, we gain the following results:—

Barometer.—1. In 461 cases (about 78 per cent.) it was found that a more or less strong *falling* in the barometer had taken place. In the remaining 139 cases the barometer had either ascended or remained stationary.

2. In 352 cases the barometer registered below the mean.

Temperature.—3. In 506 cases (84 per cent.) the *minimum* temperature of the day registered *below* 50° Fahrenheit.

4. In only 129 cases (20 per cent.) the daily range amounted to 20° F. or more.

5. In only 25 cases (4 per cent.) a strong falling of the thermometer was noted during these stages.

Wind.—6. In 302 cases (50 per cent.) *northerly* winds prevailed.

7. In 200 cases (33½ per cent.) *northwest* winds had been noted.

8. In 406 cases (67 per cent.) the *maximum velocity* of the wind was 15 *miles* per hour or more.

Chart 3.

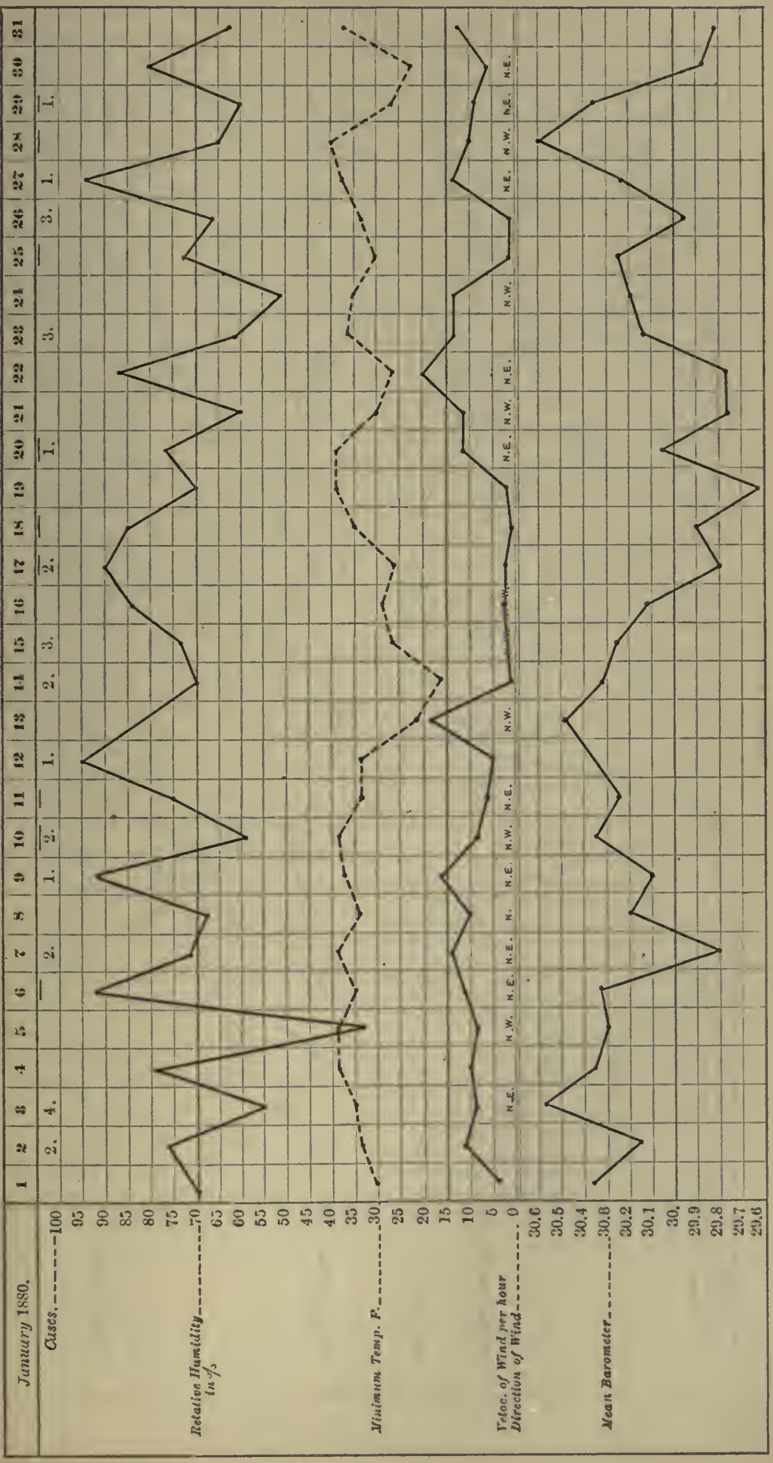

January 1880.
Cases.
Relative Humidity in %
Minimum Temp. F.
Veloc. of Wind per hour
Direction of Wind
Mean Barometer
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
30.6 30.5 30.4 30.3 30.2 30.1 30. 29.9 29.8 29.7 29.6
2. 4. 2. 1. 2. 1. 2. 3. 2. 1. 3. 3. 1. 1.
N.E. N.W. N.E. N.E. N. N.E. N.W. N.E. N.W. N.W. N.E. N.W. N.E. N.W. N.E. N.W. N.E. N.E.

Chart 4.

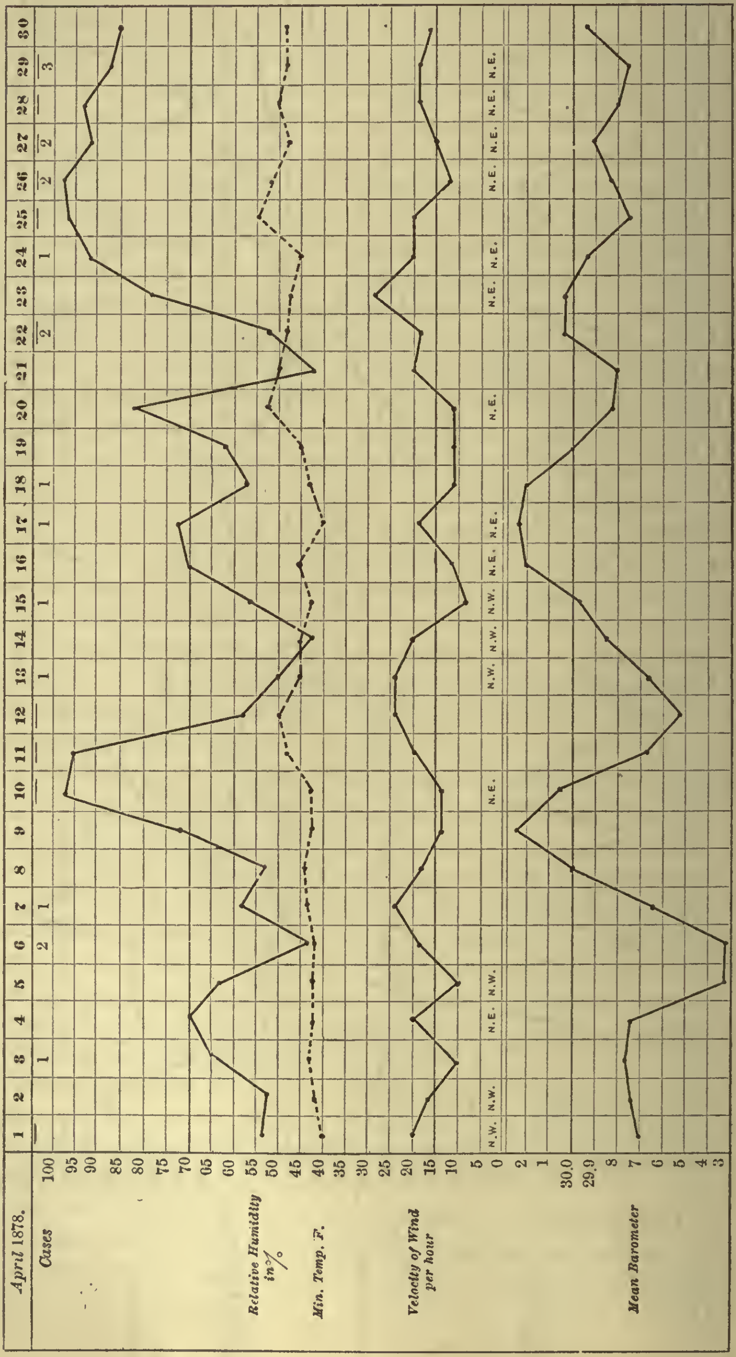

April 1878.
Cases
Relative Humidity in %
Min. Temp. F.
Velocity of Wind per hour
Mean Barometer
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
1
2
1
1
1
1
1
2
1
2
2
3
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
2 1 30.0 29.9 8 7 6 5 4 3
N.W. N.W. N.W. N.E. N.W. N.E. N.W. N.W. N.W. N.E. N.E. N.E. N.E. N.E. N.E. N.E. N.E. N.E. N.E.

Chart 5.

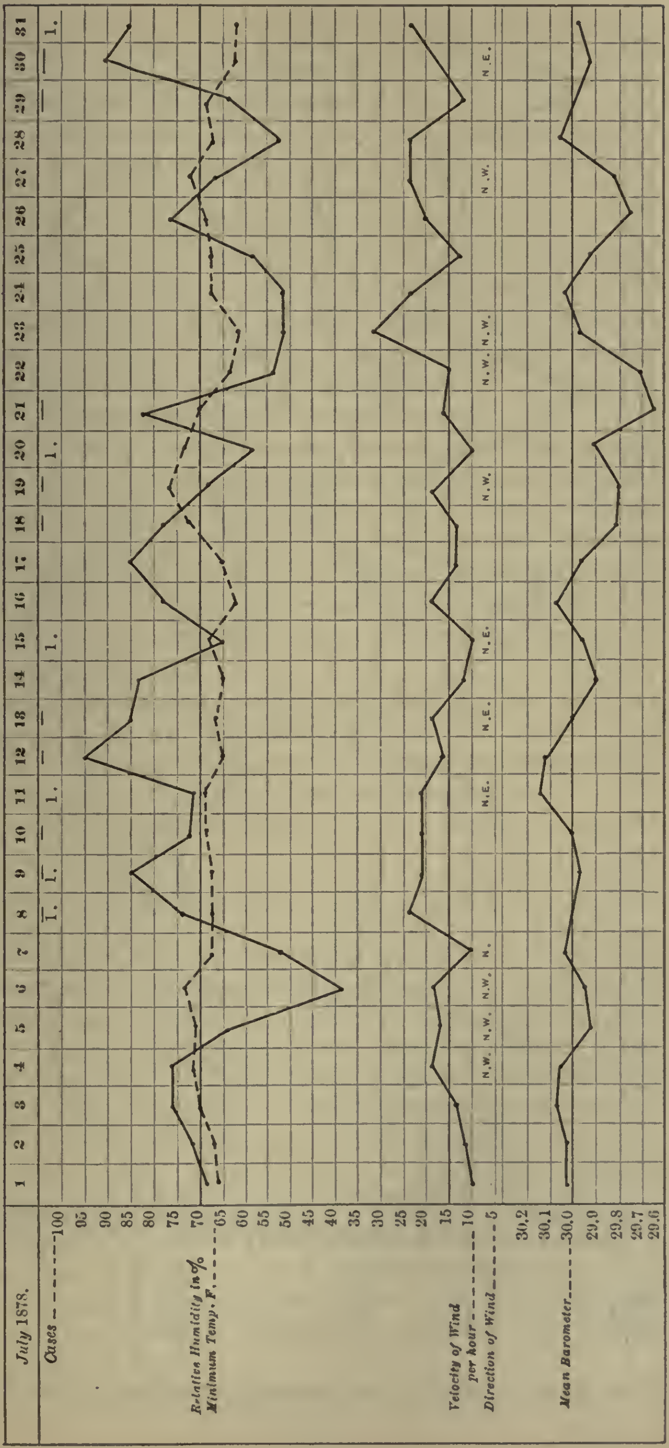
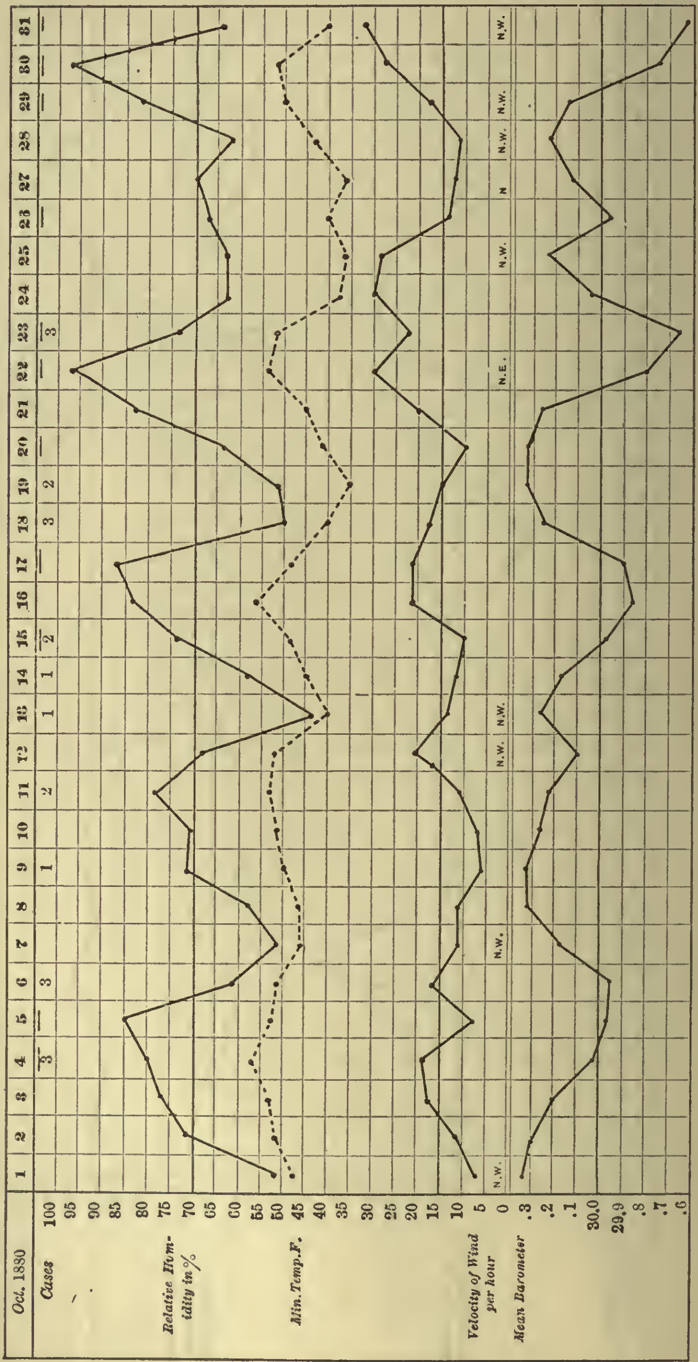

July 1878.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Cases ------
Relative Humidity in %
Minimum Temp. F.------
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5
Velocity of Wind per hour------
Direction of Wind------
N.W. N.W. N.W. N.W. N. N.E. N.E. N.E. N.W. N.W. N.W. N.W. N.E.
Mean Barometer------
30.2 30.1 30.0 29.9 29.8 29.7 29.6
1. 1. 1. 1. 1. 1.

Chart 6.


Oct. 1880
Cases
Relative Humidity in %
Min. Temp. F.
Velocity of Wind per hour
Mean Barometer
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
.3
.2
.1
30.0
29.9
.8
.7
.6
1
2
3
4
5
6
7
8
9
10
11
12
13
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28
29
30
31
3
3
1
2
1
1
2
3
2
3
N.W.
N.W.
N.W.
N.W.
N.E.
N.W.
N
N.W.
N.W.
N.W.

On summing up these figures, we come to the following conclusions:—

1. A strong fall in the barometer;
2. A low figure of the thermometer;
3. Northerly winds, and especially northwest; and at last
4. A great velocity of the wind;

seem to favour the production of pneumonia.

For reasons already given above, a result of this kind can *not* be of value, and the only way to give a result of value is to investigate the probable influences of the weather-constituents *together* and at the *same time*. To my knowledge *this* way of proceeding has never before been followed—a sufficient explanation for the negative results of E. Masson ("De l'influence des conditions Meteorologiques sur la Production de la Pneumonie," Diss. Inaug. Bern. 1879) and others.

To best proceed in this manner I drew charts for each month of the three years, containing the graphic lines of each weather-constituent separately, and in such a way as to show the relation of each one of them to either one of the others, and to all of the others together. The number of cases of pneumonia is written in the uppermost square and directly under the date of each day. The thick underlining of a date represents rain or snow. (*Vide* charts Nos. 3, 4, 5, and 6.) Each chart represents one of the seasons of the year.

Even a superficial glance at the lines indicating the *minimum temperature* and the mean humidity shows—

1. That in all months during which pneumonia is frequently found, the line of temperature runs *low*, and that of humidity *high*.
2. The *larger* the space between the course of these two lines, the *more* cases of pneumonia.
3. The *smaller* the space between these two lines, the less frequent do we find pneumonia.

The inspection of *each case* separately, and of the meteorological conditions which must have influenced the patient, gives the following figures:—

1. 554 of these cases (93 per cent.) originated in *cold and moist* air.
2. In 550 cases (92 per cent.) it was found that during the three inspected days a *strong rise* of the humidity line had taken place, either—*a.* During a falling thermometer; or, *b.* During a stationary thermometer; or, *c.* During a small and gradual rise of temperature.

The chief object of interest is the rise of the relative humidity of the atmosphere *during* a descending or an existing low temperature. If the relative humidity *increases* while the mercury of the thermometer is at the same time *falling*, and if this happens suddenly, then not only one but several cases of pneumonia will be found, even if the highest per cent. of humidity does not exceed the mean—70 per cent. *Vide* January chart (on the 25th).

If a strong and sudden rise of the humidity sets in during a stationary temperature, then we also find cases of pneumonia as well as when a small and gradual rise of temperature accompanies a strong and sudden rise of humidity.

Vice versa: If a sudden and strong fall in the temperature is noted while the humidity remains stationary and above the percentage, we also find cases of pneumonia, but this phenomenon is of rare occurrence.

As the falling of the barometer is coincident with a rise of humidity, it will be unnecessary to say more about them separately.

In those of the 600 cases in which no increase of humidity was found (5-6 per cent.), a greater velocity of the prevailing wind, together with a falling of the barometer, was found.

If a *strong wind* accompanies a *high*, a *rising*, or a *long lasting high* percentage of *humidity*, together with a *low* or (still better) a *falling* thermometer, then the frequency of pneumonia will be found astonishing. Northerly winds, as mentioned before, seem to be of the most influence in this direction.

The final result of this paper may be put into the following form:—

1. The origin of croupous pneumonia is, without doubt, very favourably influenced by certain weather.

2. It is principally the sudden appearance and the long prevalence of cold-moist atmosphere which exercises this influence. That this result coincides remarkably with the latest researches regarding the physiological and pathological influence of cold-moist air on the respiratory tract, is sufficiently known, and therefore only needs to be hinted at.

ARTICLE X.

ACRANIA MONSTERS, WITH REPORT OF A CASE.

By EMIL MAYER, M.D., Assistant Surgeon to the New York Eye and Ear Infirmary.

THE comparatively rare occurrence of this form of monstrosity, and the still more infrequent opportunity of post-mortem examination of them when they do present, makes the following case of interest:—

CASE.—I was called on the morning of April 27th to visit Mrs. S., who was in labour at term. Arrived at 10.30 A. M.; found the os thoroughly dilated, pains forcible but infrequent, and membranes at vaginal orifice. The presentation was believed to be breech, as two eminences were felt, the finger entered a cavity and none of the outlines of the face were felt on the surface. The membranes were ruptured; ʒss ext. ergot. fluid. given, and in a short time the head presented. There was something peculiar felt about this; the patient was sufficiently exposed to examine it, revealing an acrania monster with a brain-like tumour, in place of the cranium, which had two rounded prominences posteriorly, between which, but situated deeper, was the rent the finger had made, and which extended into the cavity of the skull. It was a left occipito-anterior presentation. The head lay for about ten minutes outside of the vaginal orifice, and no progress seemed to be made, although the pains were vigorous. The shoulders and rest of the child were then delivered at 11.15 A. M., but not until the finger was hooked under the shoulder-joint and the patient thus aided. Duration of labour, three and a half hours. Secundines soon followed.

The child was born dead, and was of a perfectly natural colour. Attempts to resuscitate failed. It had evidently not been dead long, as the mother had felt its movements two hours before the beginning of labour, and they were extraordinarily violent and prolonged, enough to call the attention of the husband to it. This is a point of interest, as will be seen later on.

Fig. 1.

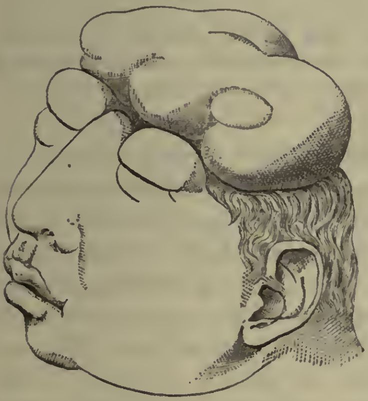
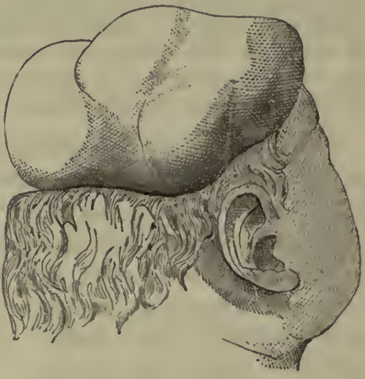


Fig. 2.



Post-mortem twenty-seven hours after birth. Body well developed and very large; the lungs were not inflated, and the other organs of thoracic and abdominal cavity appeared healthy. The head (Fig. 1) was small compared with the body. The face had an idiotic expression, which was made quite hideous by the bulging of both upper eyelids (frog's-lids). The nose was long and flat, the lips thick and separated. The right ear was fully developed and lying with its lobe on a line with the nostril. The left ear was flat, and its lobe was on a line with the mouth as in the diagram. The auditory canals were both normal. Lying directly above the upper lids, the superior portion of the nose, and extending over the whole of the upper surface of the head to the occipital protuberance posteriorly, lay the brain-like tumour, covered by membranes which ran into the hairy scalp on its borders. Anteriorly there were two prominences, one over each eye. Posteriorly (Fig. 2) were the rounded prominences mentioned, with the cavity which bore evidences of being recently made, and a thick, heavy, and short neck. The facial angle was about sixty degrees. The following measurements were taken:—

Occipito mental	5½ inches.
" frontal	5 "
Bi-parietal (its equivalent)	5 "
Sub-occipito mental	8½ "
Circumference of brain	9¾ "

The tumour was about an inch higher than if the cranial bones had been present. The head was placed in stronger alcohol and an incision made (after two weeks) in the median line, from the superior portion of the nose to the base of the occiput, and the bones sawed through to the face with a view to preserve the specimen as nearly intact as possible. On incising the growth on the head an appreciable quantity of fluid spurted out, and posteriorly the incision revealed a dense layer of adipose tissue under the scalp. There was absence of the whole of the frontal bone, except the orbital and nasal portions, the squamous portion of the temporal bones, both parietal bones, and all of the portion of the occipital bone above the protuberance. The tumour presents on incision a number of large cavities, separated from each other by walls of hard tissue, occupying the entire position which the cerebrum and cerebellum would naturally be in. The medulla seemed to be the only perfect portion of nerve substance present. The covering of the tumour was composed of two dense membranes. Numerous sections from various portions of the walls of the cysts were made and examined microscopically, showing nothing but blood corpuscles and connective tissue. No gray cells nor evidences of brain substance were present.

The literature of these monstrosities is scant. Vrolik[1] cites a case similar to the one above, and which, he says, may be called hernia cerebri, acrania, acephalia spuria, microcephalia, hemicephalia, or ancephalia.

Purple[2] reports a case of acrania, in a female child, in which "there was nothing above a point level with the base of the cranium, and this was covered by a thin, smooth membrane, having the appearance of thickened arachnoid or dura mater." The child lived a short time. No post-mortem. Eight other cases are cited in the same article, one of which has some similarity with the present one, that of Mr. Burrows (*Med.-Chir. Trans.*, 1813), as follows: "Head of child appeared very remarkably deformed. The whole of forehead, summit, and a great part of the occiput and brain were deficient, and in lieu of them a substance projected of a light mulberry colour. From the deficiency of bone the eyes appeared to project more than usual. It lived six days, during which it took no sustenance." Förster[3] cites a case in which there was absence of skull from the root of nose to the middle of occiput. "The space is covered by a brain-like body which is divided into two parts, resembling hemispheres, rounded posteriorly, and running anteriorly somewhat to a point. Each of these hemispheres is incompletely divided by deep furrows, into several lobes. This body is covered by a membrane, which on its borders runs into the hairy scalp."

Clippinger[4] reports the case of an anencephalus monster. "Child never respired; auditory canal perfect; pinna of ear unusually small and deformed. There was a serous membrane with a well-marked cicatrix near its centre, that lay on the base of the cranium."

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[1] De vrucht van den Mensch en van den Zoogdieren, 1849.

[2] New York Journal of Medicine, 1850.

[3] Missbildungen des Menschen, 1861.

[4] Medical and Surgical Reporter, Philadelphia, 1879.

The cause of monstrosities is not a very certain one; among those given are: Influence of parents, as primary disease of semen or ova (faulty development); disease of parents (this is mainly maternal, as women have been known to give birth to monstrosities where there were different husbands); among these are faulty development of ovary, Graafian vesicle, alterations in the tubes, uterus, etc.; also those diseases which disturb the component parts of the blood or the circulation in general, the pelvic and uterine in particular. Psychical, as fright or excitement, and the very doubtful one of mis-seeing. Twins pressing one on the other, the tying of the cord around any one part, are also among the causes given.

Purple (*loc. cit.*) suggests that this tumour is the result of arrested development of the vascular system, which in the normal still supplies the brain and fills the subarachnoid space.

Geddings (Purple, *loc. cit.*) believes it to be dependent upon arrest of development affecting the brain and its osseous coverings.

Vrolik (Purple, *loc. cit.*) states that from some of its forms it is clear that a hydrocephalus existed, followed by disruption. In support of this he says that he has a fœtus of two months, in which the superior part of the skull is wanting, and in which a spongy mass occupies the place of the brain.

Förster (*op. cit.*) says: "A fœtus is as capable of being diseased before as it is after birth. After the fourth month such diseases as inflammation, hypertrophy, atrophy, etc., may occur. These are the congenital troubles. Diseases occurring in embryonic life (to the end of third month) are the causes of monstrosities." He believes that the latter occur *during* the formation of parts, and not afterwards. "Examination of acrania show that in early embryonic life an abnormal serous exudation or dropsy is present."

From these remarks of Förster and of Vrolik, we can readily assume that there was in this case a condition of subarachnoid hydrocephalus in embryonic life, and that the bony structures were prevented from being developed by its presence. This seems to be the only explainable cause, as the woman is perfectly healthy, and has given birth to three healthy children. There was nothing peculiar about her pregnancy, save that she vomited much more than with the others, and had frequent pains in the right iliac fossa. The movements were vigorous, and were felt about five months before delivery.

That these monsters may live for a time is shown by the fact that nearly all of the cases reported by Purple lived a short time, one of them living six days without taking sustenance. Granted that in this case the child had sufficient medulla oblongata to enable the pneumogastric to do its work, the question of interest arises, what caused the death of the fœtus? Was it caused by the pressure upon the tumour during labour, or did the finger which entered into the substance of the growth press upon a vital part, or, what is more likely, was not that prolonged movement which excited the attention of the husband, two feet away, an intra-uterine convulsion caused by the engaging of the head at the internal os, and consequent pressure upon it?

33 RIVINGTON STREET.

ARTICLE XI.

HEART-CLOT AS A FATAL COMPLICATION IN THE ACUTE FEVERS OF CHILDHOOD.

By JOHN M. KEATING, M.D., Lecturer on Diseases of Children in the University of Pennsylvania, etc.

AT a meeting of the Philadelphia Obstetrical Society, held June 3, 1880, I had the honour of exhibiting some specimens of the thoracic viscera taken from children who died of measles during an exceedingly severe epidemic at the Philadelphia Hospital. At that time I called attention to the value of studying the condition of the heart in such cases, its bearing upon treatment, showing that a fatal tendency lay in the frequency of heart-clot. In fact, in one case a fatal result was brought about by the pressure exerted upon the right pneumogastric trunk, which was squeezed between a dense catarrhal consolidated apex of the lung, and a large indurated bronchial gland, causing irritation of the nerve, slowing of the heart's action, and the formation of a large and firm right-sided heart-clot.

It has been the experience of most practitioners whose practice has brought them in contact with the acute fevers of childhood, especially scarlet fever and diphtheria, that a frequent cause of death is heart-clot, or, in other words, that such patients are prone to fibrinous coagulations, either in the form of embolism or thrombosis, which may be an immediate or remote cause of death. In the epidemic of measles referred to, it was found that this disease not only deserved a place in this consideration, but that this was its most frequent fatal complication; particularly was this due to the pulmonary engorgement which was apt to complicate the attack either in the form of a simple extensive bronchitis, a croupous pneumonia, or that of the catarrhal variety with the resulting vesicular collapse. In fact, it may be regarded as a rule that in a patient whose blood has a tendency to clot as soon as the circulation is somewhat retarded, anything that will interfere with the normal rapid passage of the current must be looked upon as a most serious complication.

Dr. J. Lewis Smith tells us that thrombosis of the cranial sinuses has been known to result from clonic convulsion, as the cough of pertussis, "since both the cough and convulsions retard the flow of blood in the veins and sinuses within the cranium." He also speaks of sudden deaths in diphtheria due amongst other causes to the anæmia and general feebleness from granulo-fatty degeneration of the muscular fibres of the heart, which is liable to occur in all infectious diseases of a malignant type; or from ante-mortem heart-clots. We see by these statements that another factor enters into consideration as a complication in these affections, namely, the feebleness of the heart's muscle itself from a granulo-fatty change, more or less severe, brought about by the fibrile state in common with all other muscular tissue. Fothergill tells us that irritation of the pneumogastric nerve will, through its influence over cardiac action, retard the circulation, and give an opportunity for clots to form. To enumerate, then, the conditions that may give rise to this undesirable complication, we have first a heart weakened in its muscular tissue, or, owing to an insufficient ventricular contraction due to the rapid action of a weakened heart, a tendency to incomplete emptying of the cavities at each impulse; secondly, obstruction to the free circulation, most frequently due to difficult passage of blood through the lungs, either from the engorgement present, or from improper aëration, such as is seen in cases where false membrane obstructs the air passage, or where intense blood-poisoning exists; and, thirdly, probably due to irritation at times of the pneumogastric termini, or their centre, but a sure cause when the trunk itself is irritated from pressure by enlarged glands, or inflammatory products, as was stated in the case previously referred to by me. Of course, those diseases in which the blood coagulability is intensified, less mechanical obstruction will be required to produce heart-clots, and naturally we find that in diphtheria, the granulo-fatty degeneration of the heart by simply weakening the force of the ventricular contractions, will permit a clot to gradually form and finally carry the case to a fatal termination. So insidiously does this take place that death may have already stamped his victim unconsciously to us, at the time when the most careful examination has laid out the fondest hopes of a speedy recovery. A clot thus formed, may be detached, and washed to any part of the arterial system, giving rise to symptoms the importance of which are dependent upon the degree of mechanical obstruction it produces, and the organ into which it is forced. From this general statement which every practitioner can verify, doubtless, by numerous instances, it is obvious that great stress should be laid upon the early detection of the precursory signs of this fatal condition. There is no pathognomonic symptom which will guide us, there is no one sign that will tell us that the fatal clot is gradually augmenting in size, soon to obstruct the circulation, or to show that a clot, which the post-mortem reveals of an almost white colour, has been forming for a time antecedent to death, whilst the blood current was flowing swiftly enough to part with its colouring matter; we cannot tell when the deposit first began to form, nor can we say whether when once formed, it would be possible for a reabsorption to take place.[1]

The relative weakness of the radial pulse to the cardiac impulse will only be marked when a fatal fibrinous lining has coated the ventricle or its valve, and the secondary engorgement of the left auricle, and stasis in the pulmonary vein will be merely noticed as the effect of a cause by that time as well marked as itself, and thus both of these signs may follow a weakening of the cardiac wall without the formation of a heart-clot. Auscultation will not give us the same clear insight into the existing conditions, as it would in an adult's heart; especially would this be the case if the deposit does not interfere with the valvular action.

Perhaps in such cases palpation of the heart, by placing the open hand upon the precordia, affords a clearer insight than any other one means. A fair impulse which may, and indeed usually does when a clot is forming, present a sensation more or less of a fluttering or at times of a halting character, or there may be an intermittence in the force of the beat; any of these with an insufficient radial fulness, should warn us to be on the alert. If there be this evidence upon palpation of the precordia, and at the same time coldness of the extremities or an unusual pallor which would denote anæmia, the case would certainly be a grave one, and if with this we had a series of symptoms which pointed to cerebral anæmia such as would be exemplified by those present in hydrocephaloid disease, though probably of milder form at the onset, our prognosis would be based accordingly, and the degree of gravity would be in proportion to the certainty of there being an organizing clot as shown by the physical signs, together with the character and persistency of the mechanical arrest of the circulation. Of course when a clot has firmly formed, and the backing of blood begins to take place throughout the pulmonary channel, the symptoms of pulmonary engorgement with œdema, of venous systemic congestion, would follow in suit, and a gradually weakening, fluttering heart with feeble impulse and muffled sounds, a feeble, irregular, and finally indistinguishable radial pulse, dilated pupils, darkened lips, and gasping breathing—all these would be signs only too evident and too late for treatment.

Left-sided heart clots are found no doubt in most cases where the heart's muscle has been weakened, and where the death agony has been prolonged, their appearances after death, the yellow colour of chicken-fat, with prolongations into the trabeculated network of the inner heart, with extensions into the auricle and finally into the vessels, show them to be formations not of the moment but anteceding death by a length of time of which we have as yet no means of computing; especially is this the case with young children when the localization of cardiac murmurs in the febrile state is most difficult if not impossible. Occasionally in such cases the first notice we would have would be that of embolism; or possibly the miliary embolic infarction of distant organs would attract attention as a sort of metastatic complication only to be correctly interpreted by post-mortem examination.

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[1] See Article "Case of Heart-Clot, etc.," by Dr. A. V. Meigs, in vol. v., third series Trans. of College of Physicians of Phila., where, in all probability, a heart-clot existed fully *five* and a half days before death.

In the right ventricle we find a condition which I believe is more common as a final complication, and which I feel sure if early detected could be averted by proper treatment in some cases.

Any of the factors mentioned, or a combination of all, which is probably found in most cases, is accountable for the large mortality in the acute febrile affections of early childhood. Frequently I have made post-mortem examinations of children and found the following state of affairs: a heart in systolic contraction, the left ventricle empty or probably lined with a thin layer of firm yellow clot only occupying the interstices of the network of the ventricle showing the inability from weakness of the muscle to completely empty the ventricle of its contents. The lungs partly healthy, with emphysematous edges, partly congested or inflamed, with portions œdematous or hypostatically congested and probably a general bronchitis, or some broncho-pneumonia, all, or any of these, showing the mechanical impediments that checked the flow from the right ventricle. The right ventricle would contain a large firm yellow clot, at times filling the entire ventricle to the utmost of its diastole, the portions first formed, and in contact with the heart's muscle firm and tough and difficult to detach, the last formed being dark like an ordinary clot; the ramifications extending into the auricle, at times into the cavæ, and in one case into the jugular and right lateral sinus of the cranium. Last spring I witnessed the distressing deaths of three children from the ages of eight to ten years of malignant scarlatina, their cases were much alike in the feature of thorough blood-poisoning with at first high fever, in one a convulsion, in one a mottled purplish eruption with the rapid development of very severe anginose symptoms accompanied by a dense large diphtheritic membrane, which finally totally obstructed breathing through the nasal passages. Although coma did not develop early, and the muscular strength did not seem very greatly impaired, the earliest sign of a fatal termination was the evidence of a forming heart clot. This consisted in an accelerated respiration, which may have been caused by the laryngeal obstruction, and the insufficient aëration causing a venous stasis or engorgement in the lungs, and finally a troubled irregular heart with gradually diminishing pulse beats and venous engorgement.

In 1877, I saw a case in hospital practice, of a man æt. 35, suffering in the early stages of diphtheria, who was unexpectedly found by the resident physician comatose, pulseless, and cold, with respirations exceedingly rapid, the heart beating with great rapidity and irregularity.[1] Post-mortem examination showed a clot which was white, hard, and very large, existing in the right ventricle, extending throughout the venæ cavæ, and finally into the venous system; there was also found one in the left heart, though smaller but of the same character, and it was continuous from the ramifications by the pulmonary vein, and extended through the aorta and its branches.

In September last I saw a case with my friend Dr. R. W. Deaver, of Germantown, of a child, who had for several days exhibited peculiar cardiac symptoms, in connection with an attack of capillary bronchitis. The child was about ten years old, she was in delicate health, her mother having died from phthisis. The lungs showed impaired percussion resonance, with no appreciable actual dulness; there was exaggerated puerile breathing, and fine moist râles of all kinds throughout the chest posteriorly. The child's muscular strength did not seem to be greatly impaired, as she was continually moving her position for a semi-prone position, and leaning forward endeavouring to get breath to relieve her from the threatened suffocation. Her veins were engorged, the lips bluish, the pupils dilated. The heart was beating almost too rapidly to be counted, with irregularity in force and frequency. A most careful examination of her chest showed that there was marked precordial bulging, with dulness on percussion seemingly twice what there should have been for a normal heart at her age. The apex beat was forcible, fluttering, and irregular, and as the whole heart seemed to impinge upon the chest wall, it was difficult to locate the spot where the apex itself was to be felt. There was marked beating below the ensiform cartilage, and the cardiac dulness extended fully one inch toward the right of the sternum. Of course it was impossible to correctly interpret the confused mass of sound heard upon auscultation so far as to detect abnormal murmurs. In this case heart clot was undoubtedly the cause of death, although no autopsy was made, and the initial cause of the disturbance must have been the inflamed lung, in the extensive bronchitis with catarrhal pneumonia, though certainly the sounds heard by auscultation were those of pulmonary œdema which was coming on from the intense engorgement.

These cases will simply show the train of symptoms as they arise in the progress of the disease. It is a condition which we cannot be too careful to watch for in diphtheria and scarlatina. In the former disease, not only on account of the tendency to coagulation of blood which it possesses in common with the latter, but also because of the mechanical obstruction from the membranes asphyxiating the patient, and thereby causing a stasis in the pulmonary current and venous backing upon the right heart; and also because the enlarged and firm lymphatic glands of the neck press upon the jugulars and upon the pneumogastrics. In measles we have the tendency to an aggravated pulmonary catarrh, a bronchitis which on account of the vascular supply being identical may congest and finally inflame the inter-vascular tissue, and give rise to a diffused and extensive catarrhal pneumonia with vesicular collapse that may form an obstruction sufficient to gradually cause a clot to deposit.

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[1] In report of Philadelphia Pathological Society, vol. vii.

If this subject be so important a one as my limited experience makes it appear to me, it certainly deserves most careful consideration from those whose opportunities would give them the means of study. For instance, if many cases of diphtheria die of heart clot, is it not absolutely essential for us to have this in mind during our treatment, so that whilst giving our attention to the throat deposit, we may also institute early enough such treatment as will tide the patient over the severity of the disease by avoiding the worst complication that could exist. It would not be enough to use local washes, antiseptic inhalations, stimulants, milk and beef-tea *alone*—they would not act with sufficient energy to be followed by a prompt alteration in the blood to prevent coagulation, or stimulation of the heart's action.

In such cases the early use of an alkali should be associated with the stimulating and supporting treatment. Carbonate of ammonium is probably the one upon which we can place the greatest reliance, but to get the full benefit from it we must use it from the commencement, and not expect it to resuscitate a case in articulo mortis. The usual recourse to this important drug when everything else has failed, has led us to regard it with doubtful efficacy—but as a preventative of heart clot, and not its cure, it is most valuable. Probably we have lately had another weapon given us which may prove most valuable in the salicylate of sodium; this should also be given in frequent and increasing doses from an early period in the disease. The endeavour to render the blood less liable to clot by the use of alkalies should be accompanied by a trial of drugs more directly acting upon the heart itself, to regulate and stimulate its action, and for this end we have a potent weapon in digitalis. Belladonna also possesses this power to a marked degree; it would probably be well to use it, or atropia, at the onset, and to withhold the digitalis till indications for its use arise later in the course of the disease. I believe we would find a valuable aid in the nitrite of amyl, given either by the mouth or by inhalation in cases where much systemic venous engorgement exists due to cardiac weakness where no pulmonary obstruction is present, it would doubtless help to restore the balance of the circulation, relieve the congested and burdened right heart, and thus act far more favourably than would digitalis in such cases, the latter tending to simply drive an overloaded heart without relieving it of its contents, and in the effort causing final exhaustion, and a fatal issue. Should there be marked pulmonary stasis from broncho-pneumonia, digitalis would again be contra-indicated. In such cases the free use of alkalies, counter-irritation to the surface of the body, as friction, warm baths, mustard poultices, dry cupping, or local steaming, whatever in fact would tend to relieve pulmonary engorgement, would do far better than to force the cardiac muscle, itself weakened by granulo-fatty change, to drive its contents through capillaries that are already obstructed —clogged by inflammatory stasis. In such cases the free use of brandy associated with digitalis would surely be harmful, and in their stead our duty is to relieve the heart instead of driving it, by tonic stimulants, wines such as Burgundy or port, highly concentrated nourishment, fresh air and plenty of it, in fact sustain the patient, and coax the lungs to permit a freer passage of blood to the left heart. Quinia and strychnia, in small and frequent doses, would be of value in such cases. I would not give digitalis where extensive pulmonary complications exist during the height of the disease, but should a flagging heart demand its use in cases where the lung obstruction has yielded to other treatment, when there is no longer a mechanical impediment remaining, and the right heart is not overdistended, digitalis will be the drug to act as a tonic to the heart fibre, and with the aid of brandy, the compound tincture of cinchona, a small dose of the tincture of nux vomica, will keep the circulation, both venous and arterial, well balanced, and thus avoid, at least, the heart-clot from sluggish action.

If my supposition be correct that our treatment of these early childhood diseases is so often unsuccessful on account of the formation of the heart clot which will gradually grow into great importance, but which unfortunately at its onset gives no evidence of existence, the importance of studying the early signs of such a condition cannot be overestimated, and until certain symptoms or physical signs, pathognomonic in character, have been brought forward to warn us of our danger, the treatment calculated to obviate this tendency should be used at the onset of the disease; for as far as we know a heart clot once formed cannot be reabsorbed.

N. W. COR. 22d AND LOCUST STS.

ARTICLE XII.

SIMULTANEOUS LIGATION OF THE CAROTID AND SUBCLAVIAN ARTERIES FOR ANEURISM OF THE INNOMINATE. AUTOPSY TWENTY-ONE MONTHS AFTER THE OPERATION.

By LEWIS A. STIMSON, M.D., Surgeon to the Presbyterian and Bellevue Hospitals, N. Y., etc. etc.

IN the issue of this Journal for July, 1880, was published the account of an operation performed by me in January, 1880, for the relief of a patient affected with an aneurism of the innominate artery. The operation consisted in the simultaneous ligation of the common carotid and of the subclavian in its third portion, and was followed by the gradual subsidence of the tumour and the relief of the symptoms. At the time of the operation the tumour rose an inch and a half above the clavicle and was three inches broad; three months afterwards its accessible portion was reduced to a small hard lump rising one-fourth of an inch above the clavicle just behind its inner end. It remained afterwards unchanged until the patient's death; but the pulsation was not expansive, and was evidently only the lifting of the solid tumour by the underlying aorta.

The patient worked irregularly during the following year, and drank quite steadily. He complained only of occasional dull pain in the clavicle, and of the coldness of the right hand and arm in winter. In May, 1881, he began to cough and to lose flesh and strength, and by the middle of the following July had become so weak and suffered so much from dyspnœa that I readmitted him to the hospital. He presented then the physical signs of pulmonary phthisis on the right side. His condition improved slightly for a month or two, and then the dyspnœa increased, the appetite was lost, and the strength failed steadily; he took to his bed about the 10th October, and died on the 20th, almost exactly twenty-one months after the operation.

The autopsical examination was limited to the chest. The lungs were first removed, both were large, firm, and gray in section, the whole of the right and more than half of the left being almost completely consolidated.

The right clavicle was divided in its middle third, the first right rib divided near the spine, and the heart, aorta, and tumour lifted out, together with the main vessels of the neck.

The aneurismal tumour was situated in front and to the right of the innominate, conical in form, its apex lying just behind the sternal end of the clavicle. Its height was two inches, the diameter of its base two and a quarter inches. After dividing the arch of the aorta longitudinally along its concavity the orifice of the innominate could be seen dilated to a diameter of one inch and a quarter, and through it could be seen the interior of the pouch completely filled by a firm pinkish clot. The aneurism arose from the anterior and right half of the artery, involving nearly its entire length; it began just above the origin and extended nearly to the spur of the bifurcation. A second incision was carried across the anterior aspect of the aorta to and up the anterior aspect of the innominate; it exposed a second small shallow aneurism in the tracheal side of the innominate about an inch in diameter, and half an inch in height; this also was filled by a firm clot. The clots of these two pouches were in contact with each other by their bases. They were laminated in structure, closely adherent to the wall of the sac, and covered on their free surface by a membrane that was structurally continuous with the wall of the artery, so that the blood could not make its way at any point between the clot and the wall of the sac.

The aneurism, or the artery, was pervious to this extent that blood could probably pass in a small stream between the contiguous bases of the two clots.

The carotid artery was completely occluded from its origin to its bifurcation by a pale adherent clot, which was also overgrown by a membrane at the origin of the vessel and at the bifurcation. The place where the ligature (catgut) had been applied, one inch below the bifurcation, could be recognized by the touch as a transverse sulcus when the vessel was rolled between the fingers. There was no change at this point in the size of the artery. There was communication between the external and internal carotids at the bifurcation.

The subclavian artery was pervious in its first and second portions; its branches not recognizably dilated. It was entirely obliterated for a distance of half an inch in its third portion, its lumen was of full size on each side, the obliteration ending abruptly in a smooth rounded pouch. Apparently the artery had been completely divided by the ligature and its ends had separated by retraction. There was no clot on either side of the occluded part.

The common carotid was permanently occluded at the bifurcation by a white glistening membrane uniform in appearance and continuous with the inner coat of the artery.

The aorta was atheromatous, and slightly and irregularly dilated in its arch.

The heart was of normal size, the valves unaltered and sufficient.

The sternal end of the clavicle was thinned by absorption of half its thickness for an inch at its sternal end where it lay in contact with the apex of the aneurism.

The trachea presented just above its bifurcation a reddish, granular looking spot corresponding to the centre of the second shallow aneurismal sac.

ARTICLE XIII.

A CASE OF VESICO-VAGINAL FISTULA. By WALTER F. ATLEE, M.D., of Philadelphia.

THIS JOURNAL has among its original articles three of the most important, if not the three most important, contributions in surgical literature, to the cure of vesico-vaginal fistula. In the number for August, 1839, is the article of Hayward; in that for July, 1847, is that of Mettauer; and the number for January, 1852, contains the well-known article of J. Marion Sims. We know of no other beyond these of equal significance as pointing out for the first time what is needed to make successful the operation for the closure of the fistula, unless it be that of Gosset, contained in the *Lancet* for November 29, 1834.

In these articles are reported cases of complete cure of this once hopeless affection, with a detailed and reasoned account of the proper position of the patient in the operation, the necessary incisions to be made at the seat of lesion, the sutures to be used in closing the orifice, and of the after-treatment of the case.

Gosset placed his patient on her elbows and knees, vivified the edges of the fistula, made use of silver-gilt sutures, and left the patient on her face, with a gum catheter in the bladder. He says he reports his case "to introduce to the notice of the profession the use of the gold wire, or rather silver-gilt wire suture."

Mettauer's patients were placed and confined precisely as in the operation of lithotomy; two pretty broad spatulæ were used to dilate the vagina; the denuded surface was eight lines in width, and embraced the salient free border of the fistula, as well as the margin exterior to it on the vaginal surface. The suture was of lead, "because it could be tightened," and was passed directly through the vesico-vaginal septum, so as to enter the bladder eight lines from the edge of the opening, and brought out in the same way on the opposite side. A short and exceedingly light tube of silver was introduced and held in the urethra. The ligatures were removed on the thirteenth day; the tube was used for four weeks.

Hayward placed his patients as in the operation for lithotomy. A bougie was passed through the urethra into the bladder, and then held so as to bring down and expose the fistulous opening. The whole circumference of the fistula was removed one line from the edge, and the membrane of the vagina was then dissected up from the bladder all around to the extent of three lines. This was done to increase the chance of reunion by having a larger surface, and also to prevent the carrying of the needles through the bladder. The needle was introduced one-third of an inch from the wound through the membrane of the vagina and the cellular membrane underneath, and brought out at the opposite side at about an equal distance. A catheter was left in for some days, and then introduced once or twice only every day for several weeks.

By dissecting up the membrane of the vagina *to a considerable extent around the orifice*, and carrying the needles through this membrane *at some distance from the edge of the wound*, Hayward made the most important improvement ever made in this operation. It is not a certain speculum, a peculiar position, the use of metallic sutures, and a self-retaining catheter, that make the operation successful; but it is this: that not only the edges of the fistula are vivified, but a raw surface is made to a considerable extent all around it, and that the opposite sides are then brought together over the fistulous orifice in such a way that the parts brought together are not left in the lowest part of the bladder, but the upper edge is pushed upward into the cavity of that organ. Position, sutures, specula, and ingeniously contrived instruments are of use only in proportion to their assisting in the carrying out of this principle. To vivify simply the edges of the fistula, parts so narrow and so inclined downwards that it is almost impossible to place them in such exact apposition as to prevent the urine filtering between the points of sutures, is so difficult that it did not succeed often, even in the hands of Jobert, whose dexterity I have witnessed, and believe to be unapproachable.

In the remarkable paper of Dr. Sims are described and figured in twenty-two wood-cuts many mechanical contrivances, "the slow work of experiment," by which the surgeon is much assisted in the performance of this operation. He says: "The position of the patient for the operation, the speculum, the means of vivifying the edges of the fistulous opening, the suture apparatus, and the catheter, are, I believe, original with myself, having been suggested by the peculiarities of individual cases." All these things, although the invention of Dr. Sims for himself, were certainly suggested to the minds of others before his time, by the peculiarities of cases under their care, and brought to greater or less perfection in their practice, as can be seen in their communications to medical journals. He lays great stress upon a proper and free denudation of the fistulous orifice, and directs the sutures to be passed about one-half inch from the scarified edge of the fistule, pushed deeply into the vesical septum without transfixing it; brought out *just at the edge of the mucous lining of the bladder;* carried across the opening; made to enter the opposite side at a point corresponding with its direction anteriorly, observing the same precautions in its course, while it is brought out at the vaginal surface about half an inch beyond the scarified part. This figure (Fig. 1) is given in order to represent the situation of the sutures. For the purpose of vivifying the *edges of the fistule*, and of keeping these *edges* in contact, it is barely possible to improve upon the proceedings of Dr. Sims. A fistula can be cured, however, more certainly by carrying out more absolutely the principle first announced by Hayward.

Fig. 1.

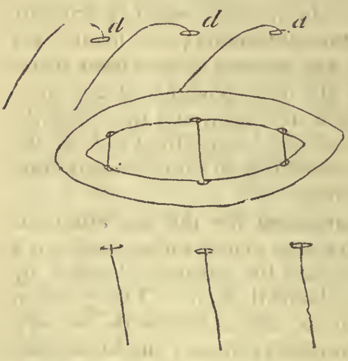
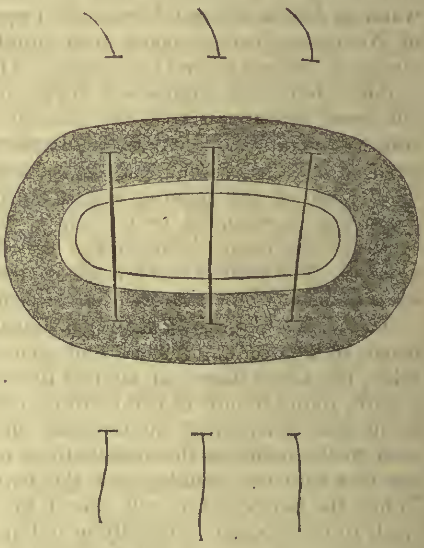


Fig. 2.



If, in place of making the suture pass just at the edge of the mucous lining of the bladder, it is made to pass at some distance from it, through a broad vivified surface made around the edge as is represented in Fig. 2, the connection with the bladder will be more certainly cut off, for there will be a contact of surfaces in place of edges, and there will be a crest projecting into the bladder in place of the depression in which the urine settles and finds its way along the sutures.

The history of the following case will show the correctness of these observations:—

Mrs. O'N., residing in Harmony Court, in this city, thirty years of age, tall, robust, and strongly built, was sent to me in October by her physician for relief, as a case of *fistula vesico-vaginalis.* She had been married for ten years; had six children, four of them still-born. With the first child she was two days and two nights in labour. After the birth of her fifth child she thought she had some kidney trouble, as her urine was always coming away, but she had never asked medical advice for this. In her sixth labour, August 17, the physician in attendance was astonished at the conduct of the opening in which his finger was passed, and which he never thought was other than the mouth of the womb. Fortunately passing the catheter into the bladder, the matter was explained to him. The patient was advised to wait for some weeks longer before submitting to an operation, and in the meanwhile to inject daily with water as hot as she could bear it. I operated upon this woman on the 1st of November, rather sooner after childbirth than is desirable when the choice of time is entirely our own. The perineum was torn to a considerable extent; the vagina was supple to the touch everywhere, and without scars or indurations; the mucous membrane was red, but without trace of ulceration; there was no excoriation externally; the fistula was situated in front of the neck of the womb, and seemed to be widest there. The extent of the opening was such that the first phalanx of my forefinger was surrounded by it; almost an inch in length, and three-eighths in width, the length being in the direction of the longitudinal axis of the vagina. The patient was full of courage, and willing to submit to anything so as to be freed from her disgusting infirmity.

The patient, having been previously prepared for the operation, as usual, by a purge, an enema, and strict diet, was placed on her back on a table, the knees drawn up against the belly, and the buttocks elevated by a hard, round bundle of bed clothing placed beneath them. This position is the most convenient one for these operations, unless the fistula be very near to the pubis, as the anæsthetic is more readily given; the blood does not flow into the bladder, and the fistula is not dragged further away. When the buttocks are well raised the upper wall of the vagina presents itself to the surgeon vertically or obliquely, rather than horizontally, and his operation is rendered thereby much easier. A small and very convenient lamp, invented by Collin, the successor of Charrière, was used to afford the necessary light. Sims's speculum was used to pull down the posterior wall of the vagina. There was little difficulty, using the ordinary instruments, in making the necessary *avivement*, which, as said above, was not on the edge of the fistula; but all around it, to a distance of one-third inch from this edge. Owing to the shape of the fistula, the sutures were passed from side to side, and in the manner above described. Five sutures, of silver wire, were used; the two sutures nearest to the womb were shotted, the other three were twisted and cut off.

After the operation nothing more was done than to regulate diet, to keep the patient on her back for ten days, and to keep the bowels quiet. No catheter was ever introduced, and she was allowed to urinate whenever and as she pleased. At the present day—November 23d—she goes about at her work perfectly well. The sutures are left, as they can do no harm, to the fistula at least, and the woman is strongly opposed to having them taken away.

By great skill in manipulation, by using most admirably contrived instruments, and by attention to minute details of treatment, these fistulæ can be cured by paring the *edges* and holding them together; but it is far easier to cure them by doing as I have done, and carry out, with the aid of more recently invented instruments, the great principle fairly laid down by Hayward in this JOURNAL: "*Dissect up the membrane of the vagina to a considerable extent around the orifice, and carry the needles through this at some distance from the edge of the wound.*"

ARTICLE XIV.

A CASE OF PULSATING TUMOUR OF THE HEAD OF THE TIBIA, TREATED SUCCESSFULLY BY COMPRESSING THE FEMORAL ARTERY; SUBSEQUENT AMPUTATION THROUGH THE CONDYLES OF THE FEMUR. RECOVERY.

By J. D. SMITH, M.D., of Friendship, Crockett Co., Tenn.

I WAS called Aug. 19, 1880, in consultation, to see D. A. W., æt. 24, and graduate of the Medical Department of the University of Nashville, and obtained the following history. Some nine or ten years ago patient discovered a tender spot about half an inch in diameter just to the right of the lower portion of the tubercle of the tibia of the left leg, which soon became painful and was attended with swelling of contiguous soft parts. This was treated by rest and liniments and the patient was soon on his feet again. But the tender spot remained. The next four or five years were spent in the active duties of farm life and of school, followed by one year's service as clerk in a dry-goods store and subsequently reading medicine and attending medical lectures, graduation, etc. During all this time the tender spot remained, but gave no particular inconvenience until the spring of 1880, after the patient was through with his medical course and commenced the active duties of a country practitioner, when it began to be painful, and upon examination was found to be slightly protuberant. In a short time the little tumour began to pulsate slightly; but the patient, encouraged by flattering prospects in his profession, and ambitious to succeed, disregarded the early warnings of what was soon to become a serious malady, and continued to perform his arduous professional labours until about August 10th, when a severe attack of rheumatic fever supervened and prostrated him.

It was after this attack of rheumatic fever had existed for nine days that I was called in consultation with Dr. T. J. Rice, to diagnosticate the tumour under consideration. The patient was found with the usual symptoms of one convalescing from an attack of rheumatic fever including slight cardiac complications and with a painful, pulsating tumour of oval shape, on inner anterior aspect of the head of the tibia of the left leg about one inch in length, three-quarters in width, and half an inch elevation in centre. Compression of the femoral artery caused the tumour, together with the pulsation, to disappear, and left an excavation in the bone into which the point of the thumb could be thrust. Removal of pressure from the femoral artery was immediately followed by return of the pulsating tumour.

Aneurism of the head of the tibia was diagnosticated. The skin and periosteum over the tumour were supported by light pressure with a gum-elastic bandage, a general anti-rheumatic course of treatment was prescribed, and one of Briddon's double-artery compressors was sent for.

The Briddon compressor not being obtainable in New York, Skey's compressor was substituted, and on the 10th day of September, the rheumatic fever having given place to a slight irritable fever the result of constitutional disturbance, compression of the femoral artery was commenced and perseveringly kept up until the circulation through it was entirely obliterated. At the time compression was commenced the tumour had increased to double its size one month previously, the skin over it was red and dusky, and the surrounding soft parts considerably œdematous. Soon after compression was commenced the tumour disappeared, the pulsation ceased, and the œdema rapidly subsided. Compression was made with the instrument at three different points, the instrument being changed from one point to another so as to avoid long-continued pressure at any one place; but for the want of an efficient nurse to attend to the instrument it took five days to completely occlude the artery, and as a result there was some sloughing of the integument. During compression the patient was kept partially narcotized by hypodermic use of morphia, and during the entire treatment a roller bandage was applied from the toes up to the perineum.

The appearance of the site of the tumour after compression was more that of an excavation than a tumour; and the part was free from pain or uneasiness until about the fourteenth day after compression had been commenced when there were stinging, darting pains similar to those felt after the first week or ten days in fractured bone. These continued ten or twelve days, after which a perfect respite was obtained from unpleasant sensations in the diseased part for about one week, when, on Oct. 12th, pain of a heavy aching character began to be felt, and on the 18th slight pulsation could again be detected. During this time the general condition of the patient had greatly improved, the pulse had dropped from 105 to 90, the appetite had changed from an aversion to all food to a smart relish for a pretty good variety, irritative fever and all rheumatic complications had subsided, and strength sufficient to move about in bed and sit propped up had returned.

But with returning pulsation at the seat of the tumour all hope of success from compression vanished, and the favourable moment for the more decisive measure of amputation was seized upon. Hence, on the 23d of October, in the presence and by the kind assistance of Drs. Rice, Phillips, York, Osborne, Griffin, Bettis, and Fielden, I performed amputation at the knee-joint, sawing off the condyles of the femur at the junction of the articular cartilage and periosteum. Being anxious to preserve the patella, but unwilling to include within the body of the anterior flap the diseased integument covering the tumour, I attempted to modify Pancoast's operation by making a *short* anterior semilunar flap, including in its margin a portion of the integument overlying the tumour, and then cutting two long posterior lateral flaps. But I found that there was not sufficient integument to cover the stump well with the patella in position, and, fearing still further loss by the sloughing of that part of the anterior flap taken from over the tumour, I removed the patella, sawed off the condyles square with the line of the shaft of the femur, curtailed the length of the posterior lateral flaps, and completed the operation accordingly. The collateral circulation having been fully established, the popliteal together with four smaller vessels were ligated. The operation was performed, and the stump dressed, antiseptically. Union by the first intention, except a small space where the flaps came together, was obtained; and no untoward symptom occurred until on the evening of the thirteenth day after the operation the patient felt something suddenly give way in the end of the stump, and immediately the blood began to run back from under the antiseptic dressing. The nurse, who had been instructed in the art of compressing the external iliac where it passes from under Poupart's ligament, immediately compressed the artery, and together with other assistants controlled the hemorrhage until I was hunted up in a distant neighbourhood, and reached the patient at midnight. With the assistance of Drs. Rice, York, and Fielden, I divided the union between the two posterior lateral flaps, extended the incision back through the sound skin about 1½ inches, exposed the bleeding popliteal artery, and ligated it about one inch above its bleeding extremity.

Upon exposing the popliteal vessel, it was found that the external articular branch was given off about three-quarters of an inch above where it had been tied, and had been sufficient to keep the channel open and to prevent the formation of the necessary clot or plug. From this time on the patient made a good recovery.

Appearance of the Bone after removal.—On the inner anterior aspect of the head of the tibia, with the centre corresponding to the lower part of the tubercle, was an oval opening one-quarter inch in length and three-quarters inch in width. Just opposite this, on the outer anterior aspect, was another opening about two lines in diameter, and under the centre of the external semilunar fibro-cartilage was a third of about the same size. The entire head of the bone was a mere perforated shell with the thickest part posteriorly, where it was about one-eighth of an inch in thickness. From this part of the shell projected into the cavity, about half-way across its antero-posterior diameter, a burr-like portion of cancellated bony structure which crumbled down on the slightest pressure. The periosteum over the large opening was considerably ecchymosed, and beneath it was a thin layer of clotted blood. Beneath this, and filling the entire cavity of the head of the bone, was a pale, thick, jelly-like substance, a little granular to the feel when rubbed between the thumb and finger, and resembling very much the exudation thrown out between the unadjusted ends of a fractured bone. The bone in the immediate vicinity of the cavity was normal, except that it was a little increased in outline, with prominences less sharply marked than natural, and a little more porous. The knee-joint, notwithstanding that the external articular surface of the tibia was perforated, was in a normal condition.

Remarks.—If the disease is situated in the head of the tibia—its most frequent seat—and is recognized and treated by compressing the femoral artery in its early stage, I think there is some prospect of a cure without amputation. The foregoing described case does not come under this head. It was in an advanced stage before it was diagnosed, and considerably more advanced before compression could be resorted to, and the writer had the merest shadow of a hope that compression might possibly result in a cure.

But the case was a very unfavourable one for amputation. The general condition of the patient was not likely to be worsted by delaying the operation, if the progress of the local disease and the constitutional irritation dependent thereon could be arrested. Compression of the main artery of the limb offered the only means of accomplishing this end, and held out some little hope that a cure might be effected. The result showed the wisdom of the course adopted. After the immediate constitutional effects of compression passed off, the general condition of the patient rapidly improved; the local irritation at the seat of disease passed off about as it would have done after an ordinary fracture; the slight pain and irritation attending the process of throwing out bony plasma to fill the cavity during the second and third weeks after compression were not greater than usually attends this stage of a well-adjusted fractured bone, and produced no constitutional disturbance; and when after the collateral circulation had become fully established, and pain and returning pulsation could be again felt in the tumour, the patient was in a fair condition for amputation. Besides, the filling of the cavity with bony plasma shows that, if the nature of the disease had been recognized in the early stage, and compression of the femoral artery resorted to, there would have been a fair prospect of a cure by the transformation of the plasma into bone, thus filling up and consolidating the part involved. If this treatment should fail, amputation could still be resorted to as in the above case. In the flat bones, where arterial compression cannot be resorted to, it seems to me that the trephine, Hey's saw, the gouge, and bone forceps should be early resorted to. The disease left to itself is inevitably fatal. If the limits of altered bone-structure can be included within the crown of a large trephine, or removed by more extensive instrumental interference without immediate fatal results, it offers the sufferer some hope for his life, and the operation is certainly as justifiable as many of the major operations of surgery now being performed. If such a case should present itself, I should certainly—after apprising the patient and friends of the gravity of the disease, as well as the dangers of the operation—not hesitate to attack the diseased part if I thought that the chances of surviving the immediate effects of the operation were equal with those of succumbing.

Before closing it might be well to allude to the secondary hemorrhage which occurred on the thirteenth day after the above detailed operation, and to draw a practical inference from the circumstances attending it. The superior articular branches are given off at a point nearly opposite the junction of the condyles with the femur. They are rather circumflex in their course, and have branches supplying structures entirely above the seat of operation. Hence, if the popliteal is ligated just below the point of their origin, they are liable, as in the above case, to afford a channel through which sufficient blood may flow to prevent the formation of the clot necessary to the occlusion of the artery. In the above case, however, I think that the danger from this source was considerably increased by the free collateral circulation consequent upon the previous obliteration of the femoral artery. But in another amputation through the femoral condyles, I should certainly bear in mind this source of secondary hemorrhage, and try to ligate the popliteal above the point of origin of the articular arteries.

ARTICLE XV.

SOME RARE AND NEW ANOMALIES IN MAN: WITH THREE CASES OF DOUBLE FEMORAL ARTERY.

By HOWARD A. KELLY, of Philadelphia.

MY notes taken in the dissecting-room for four years have repeatedly illustrated the observation, commonly made as to rarities of all kinds, that they never come singly, as the following four cases of supra-scapular artery arising from the axillary, three cases of double femoral, and numerous others in my note-book, will show.

Supra-scapular Artery coming from the First Part of the Axillary.—In about three hundred arms I have found this rare anomaly four times, occurring then on both sides of two white male subjects, in the dissecting-room of the Jefferson Medical College of this city. Both cases were observed within one week, and in each there were differences and details of arrangement of special interest, hitherto unnoticed.

CASE I. White man, slight, of moderate muscular development. Right arm, subclavian artery large, pierces the scalenus anticus muscle. Transversalis colli comes off the third part, and passes between the cords of the brachial plexus to its usual distribution. One-half inch below the border of the first rib, a large supra-scapular artery comes off the convexity of the axillary; it then passes back under what is left of the cord of the fifth and sixth cervical nerves, after they have formed the musculo-spiral, and joining the supra-scapular nerve, from the plexus two inches higher up, passes with it under the transverse ligament, the nerve *beneath* the artery. The artery gives off two branches to the sub-scapularis muscle, about one-half inch before reaching the ligament. On the left side this artery came off the axillary one-quarter of an inch below the border of the first rib, and, *mutatis mutandis*, was distributed *precisely* as its fellow.

CASE II. A white man, of moderate size and development. In the left arm the transversalis colli came from the third part of the subclavian, and was distributed as before, and one-quarter inch below the lower border of the first rib, from the convexity of the axillary, arose the supra-scapular, whose course, distribution, and relations were precisely those of Case I. The right arm was similar, with the exception of there being no muscular branch to the subscapularis muscle, and the presence of a large branch to the trapezius muscle.

In five hundred and six cases Quain saw this anomaly occurring twice on the same subject, and his picture of the right arm shows the artery giving off two muscular branches to the subscapularis muscle, and passing under the transverse ligament. The nerves are not figured.[1]

The other reference I have found is J. Bankart *et al.*, *Guy's Hosp. Rep.*, xiv., 3d Ser., 1869, p. 446, which is, in full, "the supra-scapular was in one case observed to arise from the first portion of the axillary."

I believe that these are the only cases recorded, making, with my own, seven in all.

In hunting for this anomaly I have been several times misled by a similar branch arising from the axillary, just below the first rib, but which upon further dissection was found to terminate in the subscapularis muscle.

The Middle Sacral Artery arising from the Bifurcation of a Common Trunk of the Fourth Lumbar Arteries.—I have seen this anomaly twice in the dissecting rooms of the University of Pennsylvania.

In the first case, in a white man, the right and left lumbars came off a common trunk, one-quarter of an inch long, from the posterior surface of the aorta, and one-half inch above its division into the common iliacs; and from the bifurcation of these lumbars, as ordinarily from the aorta, arose the middle sacral artery, which, after passing to the left around the promontory of the sacrum, resumed its normal position opposite to the second sacral body. In the second case, in a negress, there were five common trunks for as many right and left lumbar arteries, and from the fifth arose the middle sacral, as in the first instance; but it then passed straight on down in the median line as normally.

According to Krause, in *Henle's Handbuch der Gefässlehre*, the following from Theile sums up all the anomalous relations described as existing between the median sacral and last lumbar arteries. *Encyclop Anat.*, tome iii.; *Traité de Myol. et d'Angéiol.* par F. G. Theile; trad. par Jourdan, Paris, 1843, pp. 528–29.

> "*Middle Sacral Artery.*—It may originate in common with the last aortic lumbar, or, as I saw in one case, both of the last lumbars, from the two sides, and make a common trunk, from the left branch of which originates the middle sacral; or (according to Haller) sometimes even from the right branch."

Anomalous Pronator Radii Teres.—In a well-developed left forearm, of a white man, the palmaris longus was observed to be absent, and the pronator radii teres to arise by a head from the inner condyle, by a coronoid head, between which and the first passes the median nerve, and by a flat tendinous head, from the coronoid process lower down, which passes beneath the ulnar artery, to join the rest of the muscle near its insertion.

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[1] Quain, Plate xxiv., fig. 7.

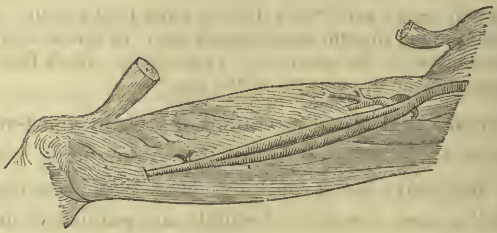
Prof. Macalister has observed this once (Catalogue of the principal muscular anomalies hitherto published [1871]. *Irish Acad. Trans.*, xxv. 1872, p. 84.

"A double coronoid head, the second lying posterior to the artery: this I met with in 1868. Mr. Kelly has informed me that he met with another instance of this in 1870, both heads lying posterior to the median nerve."

Double Femoral Artery.—The rarity, and yet the practical importance, of this anomaly is well known to every surgeon. My notes furnish three cases.

CASE I. was in the right leg of a white male subject, dissected by Dr. Crozer Griffith, at the University of Pennsylvania. The profunda came off about normally, and about four and a half inches below Poupart's ligament; the femoral artery divided into two slightly unequal branches, the inner being the larger, and these, diverging somewhat, reunited just above the canal in the adductor magnus, forming an islet of about three and a half inches in length. The anastomotica magna came off just below the point of union.

CASE II. (see figure) occurred in the dissecting-room of the Jefferson Medical College, this winter, in the right leg of a slight and poorly developed white woman. A femoral artery of normal size gave off from its outer side, two inches below Poupart's ligament, the profunda, which hugged close to its side, and divided into its usual branches. One-half inch below the profunda, and two and a half below Poupart's ligament, the femoral artery divided into two equal branches, which then continued close together down the thigh, in the proper position of the single artery, and reunited seven and three-eighths inches below, just above the canal in the adductor magnus. The anastomotica magna was given off immediately below the point of reunion.



Double femoral artery.

Another case, which I have not yet examined personally. I have the privilege of reporting through the kindness of Dr. J. Ewing Mears:—

CASE III. A white man, of about twenty-five years of age, was admitted to the St. Mary's Hospital early in August last, for punctured wound of the thigh, involving the femoral artery. On account of the hemorrhage Dr. Mears cut down on the artery, and ligated the proximal end in the afternoon. Late that same night a violent secondary hemorrhage occurred, when the wound was opened and packed, and at last Monsell's solution used. The man died some days afterwards as a result of subsequent hemorrhages, purulent discharges, and hectic. Dr. Mears being absent from the city at the time, the resident physician examined the condition of the arteries, above the ligature, and found the profunda coming off above Poupart's ligament, and immediately below, the femoral dividing into two equal branches, in separate compartments, one lying more superficial than the other; it was this outer branch which had been ligated. I cannot say whether they reunited, as usual, as I have not yet had the opportunity of dissecting the lower part of the limb, which has been preserved intact.

I find references to the following seven cases of this remarkable anomaly: 1st. Ch. Bell, *Lond. Med. and Phys. Journ.*, vol. vi. 1826. *Dublin Hosp. Rep.*, 1827, iv. 2d. Huston, *Dublin Hosp. Rep.*, 1827, iv. 314. 3d. Tyrrell's case in *Quain*, 1844, p. 515. 4th. *Quain*, 1844, Plate lxxi., fig. 2. 5th. Tiedemann, 1846, taf. li., fig. 1, oder fig. 2 der Explicat. 6th. Tiedemann, 1846. Explicat, p. 108. 7th. Chrétien, *Mém. Soc. de Méd. de Nancy*, 1880, pp. liii.–lx. Chrétien's paper I have not yet seen.

Of great interest in this connection is the following extract from Casamayor's *Essai sur l'Artère fémorale*, Juilliet, 1825. *Thèses de l'École de Médecine*, Paris, 1825, 5, p. 42, written before any case had been recorded :—

> "As the brachial artery sometimes divides close to the axilla, into radial and ulnar, it has been judged that the same would occur in the femoral, that it would divide sometimes close to the groin into two trunks, which from thence would pass down together to the upper part of the leg."

He then explains that the observations of Heister and Gooch, that they had seen it when amputating, were worthless, not being based upon dissections, and, probably, being nothing more than a strongly developed profunda. Bell's case, the first of which any published description was given, was as follows :—

> "A negro, admitted to the Middlesex Hospital for aneurism of the popliteal artery of the left leg." Mr. Bell tied the femoral artery low down. "The pulsation of the tumour ceased for a few seconds, but soon returned nearly as distinct as before the operation." The patient died on the sixth day from erysipelatous inflammation of the wound; "on dissection it was found just below the part where the profunda was given off, that the femoral artery was divided into two nearly equal branches; these ran parallel to each other to the part where the artery passes through the triceps muscle; here they reunited. The ligature was found on the more superficial artery, a little above this reunion."

A practical point of value in this case was the observation, made by Mr. Bell previous to operation, that pressure high up completely controlled the pulsation, while pressure low down did not. The anomaly here was not the cause of death, while it certainly caused the fatal issue in Dr. Mears's patient, as above reported.

Huston's case occurred in the left femoral artery of "an elderly woman." The profunda came off an inch and a half below Poupart's ligament, and passed directly back of the femoral artery. About one-half inch below the profunda, the femoral divided into two branches, the external being somewhat the larger; these lay together in the same plane, and reunited at the opening in the triceps. The inner of these branches gave off a small muscular branch, and the outer two muscular branches and the anastomotica magna. The third case, that of Tyrrell, is merely mentioned by Quain, 1844, p. 515, as occurring in a mature fœtus.

The fourth case is figured, life-size, by Quain. In the right leg the profunda comes off one inch and a half below Poupart's ligament, and about one and three-eighths inches below the profunda the femoral bifurcates, forming an islet five and three-fourths inches long. Two muscular branches come off the outer trunk.

Through the kindness of Prof. Tiedemann's son, Dr. Tiedemann, of this city, I have consulted his plate of the fifth case, in the left leg of a man of forty.

The profunda comes off two inches below Poupart's ligament, and immediately below this the femoral divides into two trunks equal in size, which, after running close together, reunite six and a half inches below. The inner gives off two muscular branches.

How Henle (*Handb. der Gefäss.*, 2d Auf. 1876, s. 311) includes this with the fourth case, figured by Quain, I cannot imagine, as they are on different legs, and differ in their measurements and muscular branches.

I extract the following brief notice of the sixth case from Tiedemann, 1846, explic., p. 109; after describing the last, which is figured life-size, he says: "I saw a similar case in the Museum of Pathological Anatomy of St. Bartholomew's in London." Can this be Quain's case?

The case recorded by Ducachet (*Amer. Med. Times*, March, 1863) is so imperfectly described that it is impossible to say positively in what category it belongs.

In amputation (he does not state at what place) for a shell wound of the knee, two arteries were seen beating in the flap about two inches apart. Upon a post-mortem examination the profunda was found as usual, and the femoral divided below Poupart's ligament. It is not known whether these branches reunited, and, in their wide separation of two inches, as seen in the flap, they differ from all the other recorded cases.

The seven cases above referred to, with the descriptions of my own three cases, make ten in all observed and recorded up to the present time.

REVIEWS.

ART. XVI.—*Review on Hypnotism.*

1. *Neurypnology; or the Rationale of Nervous Sleep, considered in Relation with Animal Magnetism. Illustrated by numerous cases of its successful application in the relief and cure of disease.* By JAMES BRAID, M.R.C.S.E., C.M.W.S., etc. London: John Churchill, 1843.
2. *Nouveau Dictionnaire de Médecine et de Chirurgie Pratique.* Art. *Hypnotisme*, par MATHIAS DUVAL. Paris: Libraire, J. B. Baillière et Fils, 1874.
3. *Animal Magnetism. Physiological Observations.* By RUDOLF HEIDENHAIN, Professor of Physiology in the University of Breslau. *Translated from the Fourth German Edition* by L. C. WOOLDRIDGE, B.Sc., London. *With a Preface* by G. J. ROMANES, M.A., F.R.S. London: C. Kegan Paul & Co., 1880.
4. *Études Cliniques sur l'Hystéro-Épilepsie, ou Grande Hystérie.* Par le Dr. PAUL RICHER. *Précédé d'une Lettre-Préface* de M. le Professeur J. M. CHARCOT. Paris, 1881. *Chapitres* V., VI., VII., et VIII., *sur Hypnotisme—Catalepsie, Léthargie, et Somnambulisme Hystériques Provoqués.*
5. *Contribution a l'étude de l'Hypnotisme chez les Hystériques; du phénoméne de l'Hypérexcitabilité Neuro-musculaire.* Par Mm. CHARCOT et PAUL RICHER. Archives de Neurologie, Nos. 5, 6, Juillet et Octobre, 1881.
6. *Hypnotism in Animals.* By Professor JOSEPH CZERMAK. *Translated from the German* by CLARA HAMMOND. *Popular Science Monthly* for September and November, 1873.

THREE epochs stand out prominently in the history of hypnotism: in the first we see the striking but grotesque figure of Mesmer, who, about the year 1772, announced his supposed great discovery of a universal magnetic fluid; the second was ushered in by Braid, whose investigations were begun in 1841; we are now passing through the third, which has been given a real scientific basis by the labours of Heidenhain and of Charcot and his school.

The story of Mesmer is a familiar one to all students of science. The immense sensation created by his performances can scarcely be credited in our own more stolid times. The French Government appointed a Scientific Commission, which was headed by Franklin, to investigate his wonderful pretensions. The committee of the medical section of the British Association, in 1842, declined receiving Braid's first communication on hypnotism. He, however, read his paper, and gave a public exhibition, which was attended by many members of the Association.

Braid was the author of several works upon hypnotism and allied subjects, and these are about to be, or perhaps by this time have been, published again in collected form. The work named above, of which we have a copy before us, dates back, however, to 1843. It embodies his most important researches and hypotheses up to the period of its publication. His remarks in refutation of materialism and against the idea of the supposed tendency of studies in phrenology and hypnotism in this direction, would probably seem, both to the theologian and scientist of to-day, a work of supererogation. Inserting records of cases attested by patients and their friends would hardly at present be considered convincing or even allowable; but Braid gives as his reason for so doing that most unwarranted interferences were resorted to by several medical men, in order to misrepresent some of these cases.

Although, as Mr. Romanes points out, Braid anticipated Heidenhain in many, if not in most, of his observations, the latter scarcely alludes to the work of his predecessor. It is probable, as suggested, that Heidenhain was only acquainted with Braid's investigations from hearsay, and therefore that the two researches, in so far as they are common, have been independent.

In this review we propose to take a general survey of our subject, and to study especially the views of Heidenhain and of Richer. Duval's article in the *Dictionnaire de Médecine et de Chirurgie Pratiques*, to which we have gone for some facts, is a clear, condensed, and, in most respects, highly satisfactory exposition of the entire subject of hypnotism. It is accompanied by an extensive bibliography, which will be found of great value to investigators.

Recent French investigations into the subject of hypnotism have been chiefly in the domain of hysteria. It is interesting to note and compare these with the results achieved by Heidenhain and his coadjutor, mainly upon educated individuals in good health and of acknowledged reliability. The medical profession owes a new debt of gratitude to Charcot and his associates at La Salpêtrière for their researches. Towards the end of 1878 Charcot made some interesting researches on hypnotism, which were the subject of several clinical conferences at his hospital, and of which a report appeared in several journals. (*Progrès Médical*, No. 51, 1878; *Gazette des Hôpitaux*, 21 Nov. et 5 Déc. 1878; *Gazette Médicale de Paris*, Nos. 46, 47, et 48, 1878.) The following year the same facts held an important place in the inaugural thesis of Richer (*Étude descriptive de la grande attaque hystérique et de ses principales variétés*, 1879), and later in his work on Hystero-epilepsy. Regnard, who contributed to the first researches of Charcot in 1878, afterwards issued several publications on this subject. (*Revue Scientifique*, No. 13, 1881; *Sommeïl et somnambulisme*, conférence faite à la Sorbonne.) Regnard, in collaboration with Bourneville, published the third volume of the *Iconographie photographique de la Salpêtrière* (1879–1880), devoted for the most part to a study of hypnotism, some extracts from which have appeared in *Le Progrès Médical*, Nos. 14 et 15, 1881; and in *la Nature*, 1881. We have made use of some of the interesting historical and other facts in these publications of Bourneville and Regnard. At the epoch of the appearance of the first works from the Salpêtrière, the only recent publication on the subject was a memoir of M. Ch. Richet. (*Du Somnambulisme Provoqué*, Robin's *Journal de l'Anatomie et de la Physiologie*, 1875.) Before this epoch, Charcot and Richer cite the works of Pau de Saint-Martin (1869), of Baillif (1868), of Lasèque (1865), of Mesnet (1860), of Demarquay and Giraud-Teulon (1868), of Azam (1860), and of Broca (1859).

Hypnotism has a history beyond that which is recorded in the plain annals of science. We see physicians, say Bourneville and Regnard, holding conversations and diagnosticating diseases that never existed even by name; and we find hysterical persons predicting their crises, which naturally occurred at the hour appointed, and which were taken by observers for terrible maladies! Vasseur-Lombard gives a method of curing cancer by magnetism. The same magnetizer treats sick animals and even diseased plants by magnetization. What has been called contemplative asceticism has always been produced by the prolonged fixation of the gaze on some object, brilliant or not, but to which some virtue was attached, and which was supposed to possess some sanctity. These contemplations, aided by a violent intellectual excitation, were rapidly followed by hallucinations, apparitions, and even a state of ecstasy, such as is described both in thaumaturgy and medicine. The books of the Christian hagiographa abound in facts of this kind. In India the devotees arrived at similar results by gazing into space; sometimes they looked at an imaginary point, often also at the end of the nose.

The historian, Gibbon, in the *Decline and Fall*, gives the story of the monks of Mount Athos, referred to by Duval, and by Bourneville and Regnard :—

> "The Fakirs of India and the monks of the Oriental Church were alike persuaded that in total abstraction of the mind and body, the purer spirit may ascend to the enjoyment and vision of the Deity. The opinions and practices of the monasteries of Mount Athos will be best represented in the words of an abbot who flourished in the eleventh century: 'When thou art alone in thy cell,' says the ascetic teacher, 'shut thy door and seat thyself in a corner: raise thy mind above all things vain and transitory; recline thy beard and chin on thy breast; turn thine eyes and thy thoughts towards the middle of thy belly, the region of thy navel; and search the place of the heart, and the seat of the soul. At first all will be dark and comfortless; but if you persevere day and night you will feel an ineffable joy; and no sooner has the soul discovered the place of the heart, than it is involved in a mystic and ethereal light.'
>
> "This light, the production of a distempered fancy, the creature of an empty stomach and an empty brain, was adored by the Quietists as the pure and perfect essence of God himself; and as long as the folly was confined to Mount Athos, the simple solitaries were not inquisitive how the divine essence could be a *material* substance, or how an *immaterial* substance could be perceived by the eyes of the body. But in the reign of the younger Andronicus these monasteries were visited by Barlaam, a Calabrian monk, who was equally skilled in philosophy and theology. The indiscretion of an ascetic revealed to the curious traveller the secrets of mental prayer, and Barlaam embraced the opportunity of ridiculing the Quietists who placed the soul in the navel; of accusing the monks of Mount Athos of heresy and blasphemy. His attack compelled the more learned to renounce or dissemble the simple devotion of their brethren; and Gregory Palamas introduced a scholastic distinction between the essence and operation of God."

The Egyptians induced clairvoyance in boys by causing them to gaze on a pool of ink in the palm of the hand. In a foot-note, Heidenhain states that, according to a communication from Mr. Rossi (physician to Halein, Viceroy of Egypt), Mm. Giraud-Teulon and Demarquay, Egyptian conjurors have hypnotized for many centuries, by making their media stare at cabalistic marks on glistening porcelain plates, or at a glittering crystal ball.

Islamism has given birth to several special methods of hypnotization. A prolonged and monotonous sound has a more prominent place than contemplation in these processes. Among the disciples of Hussein, the martyr, trance or ecstasy is brought on by means of timbrels ceaselessly beaten with the same rapid and monotonous cadence. Some of the initiated accompany with a chant, timed to the sound of the timbrels. The ceremony often takes place at night, and soon the adepts fall into a sort of ecstasy, in which cutaneous insensibility is so extreme, that it is possible to reproduce in them the different phases of the martyrdom of the master, without calling forth from them a cry, and without their even seeming to know anything about what is being done. It is, however, in the sect of Aissaoua, of which many representatives are still met with in Algiers, that these phenomena are exhibited with the greatest intensity. Those who have, by rare chance, assisted at one of their ceremonies must have been struck with the degree of anæsthesia with which these men are affected.

The scene is at night, in some solitary plain; the monotonous noise of the timbrels is heard. The adepts are seated around a large fire. Little by little they fall into a trance; some even are seized with convulsions and give forth prolonged cries. Anæsthesia becomes complete, and some are seen to apply their tongues to a bar of red-hot iron, while others, covered with blood, chew Barbary figs, the long spines of which pierce their cheeks through and through. Some swallow living spiders and scorpions —a proceeding which may be followed by grave accidents. (Bourneville and Regnard.)

Before analyzing the investigations of Heidenhain, Charcot and Richer, and Czermak, we will describe some of the so-called "methods" of mesmerizing or hypnotizing. We will also consider briefly the procedures for awaking individuals from the hypnotic state, and some of the dangers that may attend experiments in hypnotism.

Bourneville and Regnard quote from Teste methods employed by several distinguished "magnetizers," some of which we will give. Deleuze's directions, somewhat abbreviated and changed in wording, were as follows:—

> Remove from the patient's presence everybody who might incommode you. Take precautions not to be interrupted during the sitting. Seat him comfortably, and place yourself opposite and a little higher than he is, and so that his knees and feet shall be between yours. Ask that he give himself up entirely. Take his thumbs between your two fingers, so that the insides of your thumbs and his touch. Fix your gaze upon him. Remain thus from two to five minutes. Next take away your hands, extending them towards the right and left, palms outward, and then lift them up as far as the head. Place them on his two shoulders, leaving them there about a minute; afterwards draw them down along his arms to the ends of his fingers, touching lightly. Repeat this pass five or six times, always turning your hands, and sweeping them off a little before reascending. Next place your hands above the head, hold them there a moment, and bring them down before the face at the distance of one or two inches, as far as the pit of the stomach, there let them remain about two minutes, passing the thumb along the pit of the stomach, and the other fingers down the sides. Then descend slowly along the body as far as the knee, or farther, and, if you can without disturbing yourself, as far as the ends of his feet. You repeat the same processes during the greater part of the sitting. You may also occasionally get near enough the patient to lay your hands behind his shoulders, descending slowly along his spine, thence to the hips, and along the thighs as far as the knees, or to the feet. After the first passes you may dispense with putting your hands upon the head, and make the succeeding passes along the arms, beginning at the shoulders; or along the body, commencing at the stomach.

This method of Deleuze, according to Teste, is, in general, that which must be followed when one wishes to begin in magnetizing. Teste observes, however, that absolute contact of the hands with the head and epigastrium is not indispensable, but, on the contrary, is a subject of distraction, and adds nothing to the efficacy of the treatment. He believes, too, that the passes practised along the spine have no well-marked action. Finally, he states that, as a general rule, all species of direct touch appear to be superfluous. Most usually his method is to stand erect before the one he desires to magnetize, and even at a certain distance from him. After the few minutes' meditation which he says should precede every experiment, he raises his right hand to the height of the person's forehead, and directs his passes slowly downward in front of his face, breast, and stomach, taking care to let his fingers drop in such a way that their dorsal surface is directed towards the magnetized person during their ascent, and their palmar surface during the passes.

"Magnetization by the head" is described by Teste, who regards it as one of the promptest and most energetic processes.

> The operator seats himself in front of the person whom he wishes to magnetize. He first makes some long passes downward in the direction of the subject's arm, before his face, and on a line with the axis of his body, after which he extends his two hands at some inches from the forehead and parietal regions, and remains thus for a few minutes. For the whole time that the operation lasts the "magnetizer" varies the position of his hands but little, being satisfied to move them slowly from right to left, then to the occiput, and afterward to the forehead, where he leaves them indefinitely—that is to say, till the subject is asleep.

Magnetization by a fixed gaze requires in him who makes use of it a quick, penetrating look, susceptible of long fixedness. The operator seats himself opposite his subject, and each looks fixedly at the other. Sometimes it is necessary to use a few passes.

> "The Abbé Faria, a celebrated magnetizer, who exhibited his somnambulists in public, and who died with the finest reputation as a charlatan that any man in the world ever had, or ever deserved, in order to increase what there was of marvellous in his experiments, and, therefore, to give more *éclat* to his exhibitions, invented a method which had no imitator, and which hardly succeeded except in his own hands. He caused the person who wished to submit himself to his operations to be seated comfortably in an arm chair, requested him to close his eyes, and, after a few moments of reverie, said to him, in a loud and commanding voice, 'Go to sleep.'
>
> "These simple words, uttered amid a solemn silence, by a man of whom wonders were told, usually made an impression upon the patient sufficiently deep to produce a slight tremor of his whole body, along with perspiration, and sometimes somnambulism. If the first attempt did not succeed, he submitted the subject to a second, and then to a third, and even a fourth trial, after which he declared him incapable of falling into an intelligent sleep! This method does not differ essentially from the preceding, except that the cabalistic apparatus with which the Abbé intimidated the weak and credulous minds which yielded themselves up to him, by neutralizing in the latter every sort of moral resistance, prepared them for more promptly receiving the influences of a will which was in some respects powerful."

The method of Heidenhain is similar to that employed by Braid. The latter, however, did not make use of "passes."

> In the first place the individual is made to gaze fixedly at a shining faceted glass button for some six or eight minutes, the visual axes being made to converge as much as possible. Any glittering piece of glass, for example, the glass button so often used on ladies' clothes, fixed upon a dark ground, is efficacious. The special form is unimportant. A polished metal ball, etc., can also be used.

Staring at dark objects often leads to the required result, but glittering ones are decidedly preferable. Heidenhain, like Braid, found the most advantageous direction of the visual axes to be that of upward convergence. According to Carpenter, in the fixation, this upward convergence is very important; it suffices of itself in blind people, or in the night, to produce hypnosis. After the fixation of gaze has been continued for some six or eight minutes, the operator strokes over the face without immediately touching the surface, from the forehead to the chest, after each pass bringing the hands around in an arc to the forehead again. The hands must be warm. He either allows the eyelids to be closed or gently closes them. After ten or twelve passes, he asks the person to open his eyes. When this occurs without hesitation, or with only slight difficulty, he again makes the person stare at the glass for some six minutes, and then repeats the passes, which often bring about the hypnotic state, when the simple fixation does not succeed. Hypnosis can often be brought about by repetition when the result fails to be achieved at the first trials. If the eyes cannot be opened, the hypnotizer proceeds, having closed the mouth, to stroke the cheeks, in order to see whether the mouth can be opened again or not. A similar proceeding is adopted with the bent arm and clenched fist.

The methods employed by Bourneville and Regnard, and by Charcot and Richer, were the same, or similar, to some of those just given. They found that sometimes the simple application of thumbs to the eyeballs would induce hypnotism, without the preliminary fixation of gaze. Sometimes, while the thumbs pressed the eyelids, the fingers clasped the temples. Another method was to seat the patient on a chair, and have her look steadily at any object, as a pencil or penholder, placed between her eyes.

After a patient has often been operated upon hypnosis can be accomplished without the use of any special method. Here imagination comes in play, and charlatans find their opportunity. The sole idea that she is going to be put to sleep causes her to go to sleep. Some one said to a certain patient, "Mr. X. is in the next room and is magnetizing you." She went to sleep. The same thing was said to her on another occasion, sleep came on, although the one referred to was not in the adjoining room, was not even in France, and was not thinking of her.

The mode of awakening hypnotized patients is a portion of our subject, the practical importance of which will not be overlooked by our readers. Whenever Braid observed the breathing very much oppressed, the face greatly flushed, the rigidity excessive, or the action of the heart very quick and tumultuous, he instantly aroused the patient, which he always readily and speedily succeeded in doing by a clap of the hands, an abrupt shock on the arm or leg, by striking them sharply with the flat hand, pressure and friction over the eyelids, or by a current of air wafted against the face. Heidenhain makes a few remarks on the mode of arousing from the hypnotic state. Strong stimulation of the sense organs, and every change in their existing condition of stimulation, readily bring about awaking. Bright light falling on the retina, change in the retinal image, when the medium has been staring at an object and another takes its place; application of cold (as by blowing) when the skin is warm, or of heat if the latter be cold—all these suffice to dispel the hypnosis. Not only the hypnotic sleep, but also the local hypnotic symptoms can in this way be removed. The local spasm, caused by acting on the skin, can in a waking medium, with increased reflex irritability, be removed by the action of cold (*e. g.* cold stream of air, ice to the skin). Undoubtedly, too, the soft stroking over the skin in a direction opposed to the original one, must be considered as a change of stimulation.

Hypnotism, and the practice of hypnotization, are not without their dangers. According to Calmeil, "magnetism" has manufactured somnambulists by the hundred. This sweeping assertion we may, however, be permitted to doubt. By some the dangers of hypnotism have undoubtedly been overrated. Braid deprecated in the strongest terms any attempts at hypnotizing among unprofessional persons; and says that he has met with cases in which he considered it unsafe to apply it at all, and with others in which it would have been most hazardous to have carried the operation so far as the patients urged him to do.

Braid speaks as follows in regard to the hypnotic state induced by his method:—

> "I have proved by experiments, both in public and in private, that during the state of excitement, the judgment is sufficiently active to make the patients, if possible, even *more* fastidious as regards propriety of conduct than in the waking condition; and from the state of rigidity and insensibility, they can be roused to a state of mobility, and exalted sensibility, either by being rudely handled, or even by a breath of air. Nor is it requisite that this should be done by the person who put them into the hypnotic state. It will follow equally from the manipulations of any one else, or a current of air impinging against the body, from any mechanical contrivance whatever. And, finally, the state cannot be induced in any stage, unless with the knowledge and consent of the party operated on."

According to Duval, however, the imprudent practice of hypnotism may not be without danger to the security of families. Demarquay and Giraud-Teulon speak of a lady, hypnotized and interrogated under conditions analogous to those of other experiments, who undertook, during this state of loquacious sleep, to reply to their scientific curiosity by some confidences calculated to satisfy an altogether different curiosity; and so grave and so dangerous for herself were these confidences, that they hastened to awaken their unfortunate author. According to A. Dechambre the courts have been called upon to pronounce upon a case of rape accomplished during the magnetic sleep.

The dangers which may spring from the spirit of imitation, and the character of contagiousness which may affect neuroses, are dwelt upon by Duval. In 1784 the adepts and victims of Mesmer became so numerous that public order was seriously disturbed. The history of the great epidemics of sorcery and of demonomania is one not infrequently stained with blood. The spirit of the age will probably guard modern investigators from a danger of by-gone days, sometimes alluded to by writers. In ancient exorcisms, we are told the operator himself sometimes became the unwilling recipient of the frenzy of his subject. The devil, according to the theology of this cheerful period, sometimes passed out of the body of the possessed into that of the exorcist.

Heidenhain[1] was led, as a sceptic, to investigate the phenomena of hypnotism, after having witnessed the exhibitions of Mr. Hansen, a travelling mesmerist. His memoir consists of two parts. The first is a semi-popular lecture, delivered at the general meeting of the Silesian society for home culture, on the 19th of January, 1880; the second is a description of new results, obtained in some scientific observations carried on by himself and

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[1] In a short paper on *Hypnotism* read before the Philadelphia County Medical Society, October 12, 1881, and published in the *Philadelphia Medical Times*, November 19, 1881, we have already called attention to some of the observations of Heidenhain. We would also refer to this paper for a brief account of some experiments in hypnotism performed by us upon several patients, and for a fuller discussion than is here given of the hypothesis of Heidenhain.

Dr. Grützner. We will give rapidly the chief points brought out and views expressed in the first lecture.

Heidenhain found one of the most striking symptoms of the hypnotic state to be a more or less marked diminution of consciousness. In the slighter forms of hypnotism, the mediums are well able to remember what has occurred during their apparent sleep. In the more fully developed forms, they have no remembrance of what has taken place; but by giving hints and leading questions of their various actions, they are able to call them to mind. In the most complete forms of hypnotism, no remembrance whatever is retained. It can nevertheless be proved that even during the most completely developed hypnosis, sensory perceptions take place; but they are no longer converted into conscious ideas, and consequently are not retained by the memory; and this is undoubtedly because the hypnotized individuals have lost the power of directing their attention to their sensations. One deep in thought hears the striking of a clock, yet does not know how often it strikes till, by subsequent reflection, he calls to mind the number of beats. During free cerebral activity we are extremely liable to pay no attention to what we hear or see. On the other hand, the power we possess of continuously concentrating our attention in definite directions is so great that it continues even in sleep. The immediate impression on the senses and the conscious perception of the impression are, therefore, two different, separable psychological processes, of which the latter presupposes concentration of the attention.

In hypnotized persons, at a certain stage of hypnosis, unconscious sensations cause them to carry out unconscious though conscious-like acts, especially such movements of the experimenter as produce in them auditory or visual impressions. Such terms as "unconscious feeling," "unconscious perception" are self-contradictory; but by them Heidenhain means those material changes in the apparatus of the central nervous system, called forth by impressions on the sense organs, which would, were consciousness present, call forth the respective feelings and impressions.

Movements carried out before a hypnotized person, who apparently has his eyes shut, are nevertheless perceived by the eye. The closure of the lids is, in fact, not complete. It is important to understand this in order better to comprehend the manifestations of the hypnotic state, and also to clear up some of the suspicions of those who are sceptical about the genuineness of the experiments. In some of our own experiments we have had observers to object that the eyes of the one hypnotized, although apparently closed, were not entirely so, and, therefore, deception was being practised. The perceived, but not consciously perceived movements, according to Heidenhain, are imitated.

"I clench my fist before Mr. H , who stands hypnotized before me; he clenches his.

"I open my mouth; he does the same.

"Now I close my fist behind his back or over his bent head; he makes no movement.

"I shut my mouth, still over his bent head, rapidly, so that the teeth knock together; he repeats the manœuvre.

"I noiselessly contort my visage; he remains quiet.

"A hypnotized person behaves, therefore, like an imitating automaton, who repeats all those of my movements which are for him linked with an unconscious optic or acoustic impression.

"The material change brought about in the central organ through the stimulation of the organs of sense, liberates movements which have the type of voluntary movements, but are not really so.

> "Thus I can easily induce him to follow me, by walking before him with an audible step; to bend first this way, then that, by standing before him, and myself performing these movements.
>
> "In walking the medium imitates exactly the time and force of my audible steps."

In our daily life imitative movements also occur. In the normal state, the conscious idea of a movement gives rise to that movement; in the hypnotized state it is the unconscious perception of it which calls it forth. Our movements are also linked with those sensations which are connected with the carrying out of the movement in the moved part itself. A passive movement communicated to a hypnotized person is, as a rule, continued by him.

> "The peculiarity which a hypnotized person possesses of performing movements so soon as he obtains an unconscious perception, associated in some way with such movements, explains in part the secret by which the experimenter apparently completely subjects his medium to his will.
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> "In a loud voice he commands the medium to do a certain action; the latter has not the least idea of the order given. The experimenter himself, at the same time that he gives the order, performs the action in such a way that the medium must obtain a sensory impression of it. The sensory impression leads to no conscious impression and no voluntary movement, but suffices to set up unconscious imitation.
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> "Mr. Hansen, for instance, puts a raw potato in the medium's mouth, and, calling it a delicious pear, invites him to eat; accompanying, however, this request, as eye-witnesses have informed me, by audible movements of mastication. The medium chews away, purely mechanically, without the least idea of the request, or whether he is eating a potato or a pear."

The hypnotized person behaves like one who, in natural sleep, has been dreaming. Heidenhain defines and explains the expression "liminal intensity of stimulation." For every sensation a certain minimal strength of stimulation exists, which must not be diminished, or no sensation at all will be produced. If the quantity of light which falls on the retina be too small, if the intensity of a sound which meets the ear be too weak, then no sensation of sound or of light arises. The smallest strength of stimulation which first produces sensation is called, after Fechner, the liminal value of stimulation. In the hypnotized person the liminal value of stimulation is extraordinarily high; sensory impressions which produce in a normal waking individual vivid sensations, and hence conscious perceptions, are unable in a hypnotized person to pass the threshold of consciousness. Nevertheless, they are in this case none the less active. For the picture imprinted on the ganglion cells by the unconsciously perceived movement acts as a stimulus upon the motor apparatus of the brain, and liberates a similar movement, and the unconscious perceptions leave behind them traces of which he is not conscious, but which occur to his memory when similar external stimuli again force an entrance.

A symptom of the hypnotic state in its most complete development is highly marked insensibility to pain. A pin may be run right into the hand, and only an indistinct feeling of contact is brought about. Immediately on awaking the full sense of pain is again present. The long known fact that the tactile sense and the sense of pain are distinct is corroborated by experiments in hypnotism.

Increased reflex irritability and tonic spasm of the voluntary muscles accompany the hypnotic condition. Stroking the flexible right arm of a subject it at once becomes stiff, since all the muscles are thrown into a condition of reflex spasm. Reflex muscular contraction spreads over the body, when certain definite cutaneous surfaces are irritated. With slight increase of reflex irritability, those muscles alone contract which lie immediately under the area of skin which has been stroked. Stroking the ball of the thumb causes adduction of the thumb. Stimulating the skin over the sterno-mastoid causes the head to assume the "stiff-neck" position. When the irritability is somewhat more increased, we are able, by a continuous irritation of a definite spot of skin, to set in activity neighbouring and even distant groups of muscles. Heidenhain stroked continuously the ball of the left thumb of his brother, when the following muscle groups were successively affected with spasm : left thumb, left hand, left forearm, left upper arm and shoulder, right shoulder and arm, right forearm, right hand, left leg, left thigh, right thigh, right leg, muscles of mastication, muscles of the neck.

From a study of such phenomena, Heidenhain is inclined to consider that the hypnotic state is nothing more than artificially produced catalepsy.

Numerous illustrations of special phenomena of the motor apparatus, which depend upon the increased reflex irritability and tonic spasm of the voluntary muscles, are given both in Part I. and Part II. of Heidenhain's memoir. We will mention a few of these, in addition to those just quoted; premising, however, that these striking motor manifestations are by no means present in all cases. Disturbances of the sensorium may exist without them. This is the case in simple, deep, reactionless sleep, but also in persons presenting more complicated phenomena, *e. g.*, lively imitation, hallucinations, etc. Others show exactly the opposite condition; in them every hypnotic experiment produces at once marked tonic and clonic spasms which warn us to be cautious.

Sometimes more or less extensive cataleptic rigour becomes established; the limbs thus affected remain in any imaginable position in which they may be placed. The will can only be exerted with great difficulty. If, with great effort, the parts be set in activity convulsions may ensue.

In the nervous central organs are anatomical connections between definite sensory and motor nerves, which are so arranged that the stimulation of the first sets the latter into activity, and hence the muscle it supplies. The connecting link between these two kinds of fibres is constituted by groups of ganglion-cells of the brain and spinal cord. These transmit in a definite manner the irritation of the sensory to the motor nerves. During hypnosis this transmission is rendered so exceedingly easy that, in that condition, reflex phenomena readily occur which in the normal state are not met with. The often quoted experiment of Goltz illustrates this reflex sensori-motor connection. A frog whose cerebral hemispheres had been extirpated, croaked every time the skin of the back between the scapulæ was gently stroked with the finger. In the human subject a similar connection has been shown to exist between the sensory nerves of the neck and the motor articulating centre in the medulla oblongata.

The following are some of the curious reflex localizations determined by Heidenhain and Grützner :—

> "Stimulation over lower dorsal vertebræ produced contraction of latissimus dorsi and rhomboidei, with resulting powerful backward movement of both arms and simultaneous flexion.
>
> "Stimulation over last dorsal and first lumbar vertebræ caused tonic contraction of the whole erector spinæ, with simultaneous elevation of the ribs (levatores costarum, intercostales), without accompanying contraction of the diaphragm, and hence passive sinking in of the abdominal muscles.

"Stimulation over the lower lumbar vertebræ and sacral region, the person being seated, caused contraction of flexors of leg, then of the ileo-psoas, and hence, the thigh being fixed owing to the sitting posture, the trunk was drawn down towards the thigh.

"Stimulation of the skin near the sternum: strong contraction of the pectoralis major, so that the arm was drawn to thorax; simultaneous stimulation of the extensors of arm."

This investigation into localized reflex movements from stimulation of definite regions of the skin, is to us one of the most interesting portions of Heidenhain's work. It represents, as he remarks, a new series of phenomena in hypnotized persons. Its bearing upon certain important physiological questions is apparent. We can even see some possible therapeutic outcome of the research. In the treatment of those forms of palsy, spasm, tremor, aphasia, hallucination, etc., dependent upon disturbances of inhibition in the nervous apparatus, it may be found of advantage to apply revulsives, æsthesiogenic agents, or other local remedies, to those cutaneous areas which have been determined, by previous experiment, to be connected centrally with that part of the motor, articulatory, or intellectual apparatus affected.

The possibility of fixing any part of the body in any given position, constituted an essential factor in the exhibition of Hansen. This is easily done, as we have the means, firstly, of causing the medium to carry out any given movement; and secondly, of fixing any part of the body in any given position. We will give one of the examples recorded by Heidenhain. He made one of his subjects sit before him on a chair, and adapted his hands to the seat, so that his fingers grasped the edges. After hypnotizing him, he stroked along his arms, and his fingers took convulsive hold of the edges of the seat. Placing himself in front of the subject, he bent forward; the subject did the same. He then walked noisily backwards, and thereupon the subject followed him through the hall, carrying his chair with him, like a snail its shell. Some miscellaneous phenomena of the hypnotic condition are given in Heidenhain's first lecture. The very first demonstrable symptom of the commencement of the hypnotic state is a spasm of the accommodation apparatus in the eye. After some time, if the hypnotizing is proceeded with, other eye symptoms almost constantly appear. The pupils enlarge to a different extent in different people; the eyes open more widely than naturally; the eyeballs protrude. This complex of symptoms, according to Heidenhain, points with certainty to an irritation of certain fibres of the cervical sympathetic, which have their origin in the medulla oblongata. Other parts of the medulla oblongata are stimulated, as shown by rapid breathing, profuse perspiration, etc.

Part II. of Heidenhain's book is devoted to a description of new results obtained by himself and Dr. Grützner. To some of these we have already referred. Although interesting, many of these results are practically the same as those obtained by former investigators.

Heidenhain and Grützner found that on trying the susceptibility for hypnotism of a great number of persons, the most numerous cases are those in which the incapability of reopening the closed eyes constitutes the sole unusual phenomenon. Next comes a large number who cannot, or only with great difficulty, open the closed mouth; consciousness may be at the same time complete. A spasmodic contraction of the muscles causes the closure of the eye and mouth. In others the spasmodic condition spreads still further over the body. Order them to close the fist and bend the arm, and (either at once, or after gently stroking along the limb) incapacity of changing the adopted position of the limb is established; exactly the same occurs with the extended legs. With all these phenomena presented by the motor apparatus, consciousness may be quite unaffected or only slightly disturbed. If questions be asked as to what has occurred, the answers are generally right, but not seldom some links in the chain are wanting.

Many of the psychical phenomena observed were of striking character. In many people, more or less profound (reactionless) sleep, mostly, but not always, accompanied by analgesia, alone occurs. When this tendency is present, the sleep can often be most quickly brought about by causing the person to listen, with closed eyes, to the ticking of a watch. Muscular phenomena may be totally absent during the condition of sleep, or there may be more or less developed catalepsy. In others the cerebral sleep is not general; only certain parts of the brain are affected by the inhibition of function. In this state, impressions on the sense organs give rise to unconscious perceptions; these originate movements which are closely associated with the sensory impressions.

Imitation automatism is the first of the class of movements which occur when certain portions of the brain are excluded from action. We have already described some of these imitation movements. After repeated experiments, people who are at first intractable, become quite as precise in their imitation movements as others are from the first. Some curious phenomena of speech imitation are exhibited.

Automatism at command may be shown by hypnotized individuals. A glass containing ink was given to one of the media, with the request to drink some beer. Without the least hesitation, he began to drink the ink. He also, on being told to do so, thrust his hand into a burning light, and with scissors so unmercifully cut off his whiskers, which he had assiduously cultivated for a year, that, on awaking, he was greatly enraged about it. Experiments demonstrating automatism at command, require a less depth of the hypnotic sleep than do those illustrating imitation automatism. These command experiments usually form a striking part of public exhibitions, and often incline observers to scepticism. Their genuineness, in Heidenhain's investigations, was shown by the fact that senseless and ridiculous acts were performed by individuals above suspicion. Many of the supposed phenomena of automatism at command could, of course, be simulated.

It is possible to induce dreams on those who have been hypnotized by talking into their ears. In one of the persons experimented on, a tale always excited changes in the countenance corresponding to the nature of the former. When the hypnosis was over, the person knew scarcely anything of what he had gone through; but by giving hints, he was able to call to mind certain parts of the dreams, but denied any remembrance of others. These phenomena of induced dreaming, and artificial hallucinations, have been well described by Chas. Richet, whom we have already quoted, and who is referred to by Heidenhain. ("Du Somnambulism Provoqué," *Robin's Journal*, 1875; also "Les Démoniaques d'Aujourd'hui," *Revue des Deux Mondes*.)

In unilateral hypnosis the phenomena of the hypnotic state are present on one side of the body only. In one of the media, by means of gentle pressure upon the forehead and temple of one side, the influence of the will upon the extremities of the other side could be removed, or, at any rate, to a great extent lessened. Heidenhain found that his brother was so influenced by stroking the left forehead and temple, that immobility of the right arm and leg, and of the right side of the face, with ataxic aphasia, was produced. When the corresponding cutaneous area on the right side was stroked, all the above phenomena appeared on the left side, except the aphasia, which was completely wanting. When both sides were simultaneously stroked, both arms and both legs became cataleptic, but no disturbance occurred in speech or facial movements. A few other suggestive phenomena are recorded under "Unilateral hypnosis."

In unilateral hypnosis some surprising sensory disturbances occur. These disturbances seem to extend to all forms of sensibility. By stroking the skin over one temporal area, very remarkable disturbances are observed in certain sensory processes on the affected side.

Distinguishing between hot and cold by the cataleptic arm was rendered very difficult. In two persons it was found that they could no longer with certainty distinguish when they were touched with a glass full of hot water, and when with one full of cold. Sensation of changes of temperature, therefore, requires a much longer time than the simple sensation of contact. Investigations into modifications of temperature were not pursued at any length.

Prof. Cohn, in conjunction with Heidenhain and Grützner, examined very closely into certain affections of vision in unilateral hypnosis. They found a striking disturbance in the process of accommodation and in the perception of colours in the eye of the cataleptic side. Accommodation spasm, it will be remembered, occurs at the commencement of hypnosis. In unilateral hypnosis, this occurs only on the affected side. The spasm is so great that the near point is only twenty millimetres from the eye. In unilateral hypnosis the sensorium is apparently completely unaffected. Hence it would follow that one hemisphere of the brain suffices for all psychical functions.

The conditions necessary to the induction of the hypnotic state are considered by Heidenhain. He especially emphasizes the fact that no specific force is exerted by the experimenter upon the passive subject. According to him, "susceptibility" to hypnotism depends on the existence of a greater or less degree of sensory irritability; consequently, pale anæmic individuals are most liable to hypnosis. An opposite view is held by others. Heidenhain regards the preliminary staring at the glass button as a means of increasing sensory irritability. Mr. Hansen regards it as a means of quieting. Different people react differently to the various kinds of stimulation; some more readily with cutaneous, others with retinal or aural stimulation. When he speaks of increased irritability of the sensory apparatus, he means not merely the sensory nerves themselves, but also their central ganglion-cells in the cerebral cortex, which brings about the consciousness of the sensation; in fact, all those parts of the brain which act as the sensorium.

To many, we have no doubt, one of the most interesting phases of this subject of hypnotism is that which considers the nature of the hypnotic condition. "It is the fate of every investigation in natural science," says Heidenhain, "that, after the establishment of a series of connected facts, which can be objectively observed, an hypothesis must be established which brings these facts into causal connection with one another."

Mesmer believed that he had discovered a universal fluid, whose operations he could regulate; that he could concentrate or liberate it; that with it he could preserve health or cure disease. Others have held to the existence of a peculiar vital fluid, capable of being variously affected. Spiritual, electrical, and magnetic hypotheses have had their advocates. The committee of the French Academy attributed the mesmeric phenomena to the effects of the imagination. According to the late Professor J. K. Mitchell, who was the author of one of the ablest papers ever published on "Animal Magnetism," hypnotic effects are produced by induction.

> "The mesmeric influence is the effect of what the natural philosophers call induction. The will of the operator acts solely on himself; his altered system reacts by proximity on the subject of the experiment, by an unexplained power, analogous to the equally inexplicable induction of the mechanicians, and the presence of the chemist." (Five Essays. By John Kearsley Mitchell, M.D. Edited by S. Weir Mitchell, M.D. Philadelphia 1859.)

We can, as does Romanes, fearlessly agree with Heidenhain, and all scientific investigators from Braid downwards, in rejecting these hypotheses. We can also agree in dismissing the hypothesis of a "dominant idea" taking hold of the mind, and through the mind influencing the body. "It would clearly be a somewhat difficult matter," says Romanes, "to indicate the dominant idea which, for instance, Athanasius Kircher communicated to a fowl when he made the animal lie motionless upon the ground with its beak resting upon a chalked line, or which Czermak communicated to a crawfish, when he made this animal to stand motionless upon its head." The hypothesis which Braid suggested may also, according to Romanes, be set aside as at all events insufficient to explain the primary facts, or those of the hypnotic sleep. Braid regarded the latter as probably due to a disturbance of the cerebral circulation. Heidenhain shows that it is impossible that contraction of the cerebral arteries is the cause of the hypnosis. Professor Foster was unable with the ophthalmoscope to discover any constriction of the retinal vessels, and Heidenhain was able to hypnotize his brother even while the latter was strongly under the influence of nitrite of amyl.

The hypothesis of Heidenhain is that the cause of the phenomena of hypnotism lies in the inhibition of the activity of the ganglion-cells of the cerebral cortex; the inhibition being brought about by gentle prolonged stimulation of the sensory nerves of the face, or of the auditory, or optic nerve.

Heidenhain refers to the views of the localizationists of the school of Ferrier, according to whom different areas and levels of the brain have different functions. He is decidedly of the opinion that the movements in hypnotized individuals are caused by the sensory impressions calling forth in some part of the brain situated below the cerebral cortex changes which act immediately as stimuli upon the motor apparatus; that hence the apparently voluntary movement of imitation is carried out, like a reflex action, independently of the will.

While the hypothesis of inhibition seems best to cover the ground, it cannot by any means be considered as established. It is a good working hypothesis, far better and more tangible than the older speculations about "magnetic" and "vital" fluids, but perhaps it does not fulfil all the requirements of a satisfactory explanation. As Mr. Romanes puts the question, the physiological principle of inhibition is one which is known to apply to all the animals which are found to be susceptible to hypnotism, and there can now be little or no doubt that this is the source from which the explanation is to be sought.

We cannot conceive any good reason for Heidenhain calling his book *Animal Magnetism*, discarding, as he does, the "magnetic" hypothesis, and using throughout such terms as "hypnotism," "hypnosis," "hypnotic," "hypnotize," etc. On the whole, we think that Braid's term "*Hypnotism*" is the best. It is neither the embodiment of an hypothesis, nor the apotheosis of an individual, and, therefore, is free from the objections which belong to such terms as "animal magnetism," "electro-biology," "mesmerism," "Braidism," etc.

We will next pass in review some of the most important observations recorded by Richer in his work on hystero-epilepsy.

The first observation is on the influence of light on catalepsy and hysterical lethargy. The patient is placed before a bright focus of light, as a Drummond, or electric light, on which she is requested to fix her sight. In a short time, usually a few seconds, or several minutes, sometimes instantaneously, she passes into the cataleptic state. She is as one fascinated, is immobile, the wide open eye fixed on the light, the conjunctiva injected and humid. Anæsthesia is complete. If the patient was hemi-anæsthetic she becomes totally anæsthetic. She does not present contractures. Her limbs preserve the suppleness of the normal state, or nearly this—sometimes being the seat of a certain stiffness; but they have acquired the singular property of preserving the attitude which one gives them. It is that state which all authors have described under the name of catalepsy. The patient keeps during a long time positions which it would be very difficult to sustain when not in this state. All communication with the exterior would seem interdicted, and she gives no sign of intelligence in response to the numerous questions addressed to her. One interesting peculiarity is the influence of gesture on physiognomy. The features reflect the expression of the gesture. A tragic attitude imprints a severe air on the physiognomy; the brows contract. If one brings the two hands to the mouth, as in the act of sending a kiss, a smile immediately appears on the lips. It is an example of that which Braid calls the phenomena of *suggestion*, of Heidenhain's imitation. The state of catalepsy endures as long as the agent which produces it, that is, as long as the light continues to impress the retina.

If the light disappears suddenly, or if we prevent the luminous ray from passing through the eye by a screen, or simply by lowering the upper lids with the hand, the catalepsy gives place to a new state which differs from it essentially, and which corresponds to that which has been given the names of somnambulism, provoked somniation, nervous sleep, magnetic sleep, etc. It is a special state differing by strong characteristics from true sleep. Charcot prefers to designate it under the name of lethargy. The hysterical lethargy begins abruptly with the cessation of the luminous impressions. If the patient is standing, she falls backwards, the head thrown backwards, and the neck projecting. The eyes close, a whistling inspiration is heard, accompanied by some noisy movements of swallowing.

A very remarkable phenomenon, designated by Charcot *neuro-muscular hyperexcitability*, is developed immediately after the patient falls into the state of hysterical lethargy. It is sufficient to excite mechanically a muscle through the skin, either by pressing or rubbing lightly, to cause a contraction in the same manner as is done in localized electrization. The contraction of a muscle, or of the limbs, persists after the excitation; if a little strong and a little prolonged, it is easily transformed into a permanent contracture. The excitation of a nerve produces contraction in the muscles, which it innervates. A light pressure made before the lobe of the ear, or at the point of emergence of the facial, brings on contraction of the muscles of the same side of the face. Each muscle of the face touched singly contracts singly. We cannot fail to observe the analogy between these observations and those of Heidenhain on increased reflex irritability. These phenomena of neuro-muscular hyperexcitability are elaborately discussed and illustrated in the contribution of Charcot and Richer to the *Archives de Neurologie.*

A curious difference is noted between the muscles of the face and those of the limbs. In the face it is easy to produce *contraction* of the muscles at the time of the experiment, but *contracture* (persistent contraction) is provoked with difficulty. The latter, however, may be more readily produced in the limbs. Resolution is not always complete. In one case, for instance, the head often preserved a slight degree of rigidity. Most frequently, however, the limbs are in a state of complete resolution.

Other signs which characterize produced hysterical lethargy are a constant trembling of the upper lids, turning of the eyeballs in different directions, and the persistence of anæsthesia total and absolute. The patient, up to this time inert, can, under the influence of certain excitations, enter into a second phase which approaches more nearly to that of somnambulism. If one speaks to her a little sharply, she raises herself and turns the eyes shut, towards the speaker. She can be made to write, sew, etc., with almost as much precision with the eyes shut as with them open. The muscular sense, as supposed by Azam, seems to replace the sight. She replies to questions with more precision than in the normal state. During this second phase, the muscular phenomena of the first persist in the same degree. In order to bring the patient out of this state, it suffices to breathe on the face, or to compress the ovaries. At the moment of returning to herself, she is taken with a pharyngeal spasm, which brings a little froth to her lips, as after a true convulsion. She has no recollection of what has passed during this sleep.

The characteristics of the two abnormal states—catalepsy and lethargy—into which hystero-epileptics may be thrown are summarized by Richer as follows:—

1st. *Cataleptic State.*—The eyes are wide open; total and absolute anæsthesia; aptitude of the limbs and different parts of the body to preserve the situation in which they are placed; little or no muscular rigidity; impossibility of causing muscular contraction by mechanical excitation.

2d. *Lethargic State.*—The eyes are wide open or half closed; persistent trembling of the upper eyelids; convulsion of the eyeballs; total and absolute anæsthesia; muscular hyperexcitability; the limbs in a condition of resolution do not preserve the situation given to them, except the provoked contracture impressed upon them. The lethargic state has two phases: (1) that of *carus* or *sleep*, and (2) that of *somnambulism.*

Sometimes the contracture brought on by mechanical excitation while a patient is in the lethargic state, persists afterwards. This was first noticed more particularly when the patient was awakened from the state of catalepsy, while contractured. It was found later that the contracture sometimes persisted on directly awakening the lethargic patient. In such cases the hystero-epileptic offers all the appearances of one affected with permanent contracture. She appears to be under the influence of what might be called a diathesis of contracture. The muscles are susceptible of contracture under the action of very different agents, as, for example, the magnet. Supposing the patient to be affected with contracture of the right arm, if the left arm is acted upon by a magnet, by placing its poles near the skin, the left arm becomes contractured, and, at the same instant, the right regains its normal flexibility. In *Le Progrès Medical* for 1878, a case is reported in which the magnet was thus utilized for the cure of a permanent hysterical contracture in a religieuse.

Hemicatalepsy or hemilethargy may be produced on a patient, and they may both exist simultaneously in the same subject. A patient is plunged into the cataleptic state under the influence of a bright light. We shut with the hand only one of the eyes, the patient at once becomes lethargic on the same side only; the other side remains cataleptic. The limbs and face of one side are in resolution, and exhibit the muscular hyperexcitability characteristic of lethargy, while the limbs of the other side have the property of preserving the attitudes communicated to them. We see here conditions analogous to those brought about in the experiments of Heidenhain and Grützner in unilateral hypnosis.

In the experiments at Salpêtrière the hystero-epileptics were sometimes plunged into the states of catalepsy and lethargy under the influence of sonorous vibrations. Two patients, for instance, seated on the strengthening box of a tuning-fork (diapason) are rendered cataleptic. On abruptly arresting the vibrations of the diapason, the patients were plunged into lethargy. The transition must be abrupt in order to bring about the change from catalepsy to lethargy, the light must be suddenly removed, or the vibrations suddenly arrested. If the vibrations are allowed to diminish slowly, until exhausted, the catalepsy persists.

Several curious and entertaining experiments are related by Richer to illustrate the production of catalepsy by an auditory impression.

In the state of lethargy, produced by fixity of gaze, the phenomena sometimes differ a little from those observed when the hypnotism is brought about by other means. The resolution of the limbs is not always complete. During the lethargic sleep, a slight degree of catalepsy sometimes exists in the upper limbs, sometimes in one only. These limbs are the seat of a certain amount of stiffness. Opening the eyes renders the catalepsy complete, and causes the muscular hyperexcitability to cease.

One of the patients described by Richer, ordinarily had a hyperæsthetic zone on the top of the head, pressure on which was very painful. A sort of epileptic vertigo was also produced by this pressure. The patient was readily lethargized by fixity of gaze. Pressure on the top of the head would now bring on a peculiar state of sleep with rigidity, often general. This rigidity disappeared readily by light friction on the contractured members; and now a state of resolution obtained, but without muscular hyperexcitability, and with a condition of somnambulism more perfect than when muscular hyperexcitability accompanies the lethargy. In fact, the patient got up with vivacity, walked easily, and sought to follow the experimenter. Faradic electricity failed to produce contractions when the patient was in this state, although in lethargy with muscular excitability, faradization infallibly produced permanent muscular contraction.

During the state of provoked hysterical catalepsy sight and hearing can be affected by various procedures. The eyes are fixed and seem not to see anything. If, however, an object is lightly oscillated in the axis of the visual rays at a little distance from the eyes, soon the gaze of the patient will follow these movements. The eyes, and sometimes even the head, seem to turn at the will of the operator. Hallucinations are produced. When the look is directed upwards, the expression becomes laughing, when downwards it is sombre. The cataleptic state may now cease completely. The patient walks, follows the object on which his gaze is fixed, and takes attitudes in relation with the hallucination suggested. Music also will cause her to assume positions related with the various sentiments suggested to her by the music. Sudden withdrawal of the object from before the eyes, or of the sound from the range of hearing, causes a return of the catalepsy. When the attention of the cataleptic subject is attracted, she becomes capable of executing a series of unconscious acts, which produce themselves after the manner of reflexes.

The cataleptic patient, in whom the eye is in such a state as to perceive the movements of an experimenter placed in front of her, will reproduce those movements exactly. The patient usually performs these acts after the fashion of an image observed in a mirror. If the experimenter elevates the right arm, the patient will elevate the left. Movements which are accompanied by a characteristic noise need not be seen to be repeated. If the experimenter placed behind the patient claps the hands, she will do the same, etc. It is unnecessary to point out the similarity of these experiments to those mentioned in Heidenhain's memoir.

The muscular sense carries to the nervous centre the notion of the exact position of the limbs. It may be equally the source of the automatic movements, perfectly co-ordinated, which execute the action of which the position of the limbs is the image. For example, in the angle of a room a patient is placed with one foot on the rounds of a chair, and the two hands seizing the folds of a curtain as in the act of climbing; scarcely has this attitude been communicated to her when, in the twinkling of an eye, she has scaled the chair, and we have great difficulty in holding her back and making her let go the curtain from which she hangs suspended. The same experiment was repeated successfully with several other patients. Another patient placed "on all fours" walked about rapidly, like a quadruped. Placing the limbs in the attitude of the beginning of a hystero-epileptic attack, such an attack could be ushered in.

Another series of phenomena of automatism, more complicated than those already discussed, has been treated of by Mesnet, under the name of the *automatism of the memory and the recollection.* If we place in the hands of a cataleptic patient an object of which she knows the use, we will see her pass out of the state of catalepsy to work with the object. A hat is placed in her hands, she turns it between her hands and places it on her head; an overcoat is handed to her, she puts it on and buttons it with care; given a glass she drinks, a broom she sweeps, etc.

From the experiments just detailed it will be seen that Richer distinguishes four peculiar nervous states: 1st, The state of catalepsy; 2d, the state of suggestion; 3d, the state of lethargy, properly so called, or lethargy with muscular hyper-excitability; 4th, the state of lethargy without muscular hyper-excitability, or the state of somnambulism.

The method of "passes" employed by the so-called mesmerizers or magnetizers, does not seem to have been resorted to much at Salpêtrière; but in a foot-note, Richer expresses his belief in the analogies between the sleep thus produced and the hypnotic state brought about by the methods which he describes. He speaks of a few experiments made in his presence on hystero-epileptic patients. The operator made passes, his gaze fixed on the patients, holding their hands; he applied his hand to the pit of their stomachs, etc. The patients, at the end of a few minutes, lost consciousness and fell in resolution with their eyes shut; they slept. Contrary to Richer's experience, in hypnotism, however, the coming in of the sleep was progressive, without the least shock, and without the slightest epileptoid sign. Neuro-muscular excitability did not exist. Insensibility to pricking was absolute and general. The patients replied to questions, walked, wrote, etc., in a word, performed certain acts of somnambulism.

Experiments in hypnotism have not been limited to those performed on human beings. The lectures of Professor Czermak, which were delivered in the private physiological laboratory of the University of Leipsic, in January, 1873, contain a *resumé* of interesting observations on hypnotism in animals. These lectures, in discussing the phenomena of hypnotism as shown by animals, also put clearly and strongly the absolute necessity of exact, thorough, and unbiassed methods of observation and investigation.

Czermak, while sojourning in Bohemia, made the acquaintance of a gentleman who claimed that he had not only seen others magnetize crawfish, but had himself succeeded in the attempt. His method, which he demonstrated, was to hold the crawfish firmly in one hand, and with the other make "magnetic" strokes from the end of the animal toward the head. In a short time the crawfish became quiet, and placed itself on its head, in which position it remained motionless until passes were again made in the opposite direction, beginning at the head. Czermak soon found that the crawfish would stand just as placidly on its head without as with the magnetic passes. The reverse strokes were found also to be unnecessary. That the actual change of posture in the crawfish did not depend upon a mysterious fluid proceeding from the experimenter, was proved by experiments in which the crawfish was not touched or held by the hand in any way. In one case the crawfish was suspended by a string around its tail, in another it was rolled on its back by means of a glass tube, and, in both instances it, after a time, remained motionless.

Czermak's interest having become greatly awakened by the curious effects observed in the crawfish, he concluded that he would perform further experiments. He determined first to test the statement, often made, that wild, frightened hens, are liable to become completely motionless, as if enchanted by some magical spell, after being held with gentle force upon the floor or table, where a chalk-line has been drawn the length of the beak or diagonally from each eye. The experiment proved successful. He soon discovered that the chalk-line was not an absolute essential to success.

The investigation of hypnotism in animals is certainly not a study that can be called entirely "new" or "modern." Czermak gives some account of an experiment of old Athanasius Kirchen, a celebrated *savant* and Jesuit from Fulda, who as early as 1646 published in Rome a work, "*Ars magna lucis et umbræ.*" Kirchen tied a hen's feet together with a narrow ribbon and laid the animal on the ground, where, after many cries and violent struggling, it became quiet, "as if," he says, "despairing of escape through the fruitlessness of its motions, it gave itself up to the will of its conqueror." He then drew a chalk-line in a diagonal direction from one eye to the other, loosened the ribbon, and the hen, although left perfectly free, remained immovable, even when he attempted to rouse it. Kirchen therefore affirmed that the hen thought the chalk-line a string by which it was bound at its feet, notwithstanding that the ribbon had been loosened. This he attributed to the force of the animal's imagination.

Czermak experimented not only upon hens, but also upon geese, ducks, turkeys, and even a timid, unruly swan, and succeeded in placing all these animals in a stupefied condition. He found that a hen, which for a minute had been in a motionless state, caused by simply extending the neck and depressing the head, awoke and flew away; but, on being caught again immediately, could be placed once more in that condition of lethargy, by putting the animal in a squatting position, and overcoming with gentle force the resistance of the muscles by firm pressure with the hand upon its back. Some experiments were also performed upon small birds, upon frogs, and upon pigeons. Czermak concluded that Kircher's *experimentum mirabile* illustrated a real state of hypnotism; also that the proof of the actual appearance of hypnotism in animals was the scientific result of his own observations and experiments.

Heidenhain's researches and those of Bourneville and Regnard seem to have been althogether physiological, or, at least, to have been made without special reference to therapeutical applications. Richer reports here and there a cure of hysteria achieved through the agency of hypnotism. One of the great practical outcomes of a study of hypnotism—a result which indirectly has an important bearing upon diagnosis, prognosis, and treatment—is that indicated by Richer when giving his reason, in his great work, for his long digression upon the different nervous states which it is possible to produce among hystero-epileptics. A knowledge of these states of catalepsy, lethargy, and somnambulism facilitates greatly the study of some of the varieties of grave hysteria. We get a clearer insight into the nature of the disease when we understand thoroughly the phenomena which can be artificially produced in the sick.

In Part II. of Braid's book he reports in more or less detail sixty-six cases in which he claims to have applied hypnotism successfully in the cure of disease. A careful analysis of these cases does not fully support this claim. The list includes cases of loss of sight and hearing, of tic douloureux, anæsthesia, motor paralysis of various kinds, aphonia, rheumatism, headache, spinal irritation, epilepsy, spinal curvature, neuralgia, palpitation of the heart, diseases of the skin, lock-jaw, and tonic spasm. According to Duval, the most useful and incontestable effects of hypnotism in medicine have been obtained in the treatment of certain neuralgias. Demarquay and Giraud-Teulon have indicated the benefits to be derived from it in uterine pains. Duval quotes a success obtained by Sée in a violent attack of asthma.

Hypnotic anæsthesia has been made available in practical surgery. Braid reports several cases in which he employed hypnotism to relieve, or entirely prevent the pain incident to patients undergoing surgical operations. In a number of instances he extracted teeth from patients under this influence without pain. In another patient he made an incision into an abscess connected with disease of the orbital process of the frontal bone, and the patient, being hypnotized, suffered no pain. In an adult with the worst variety of talipes varus of both feet, one foot was operated on in the usual way, and the other whilst the patient was in the primary state of hypnotism. In the latter case the operation was performed without discomfort to the patient. From his experience in a number of cases, Braid infers that if it is intended to perform an operation *entirely without pain*, whilst in the hypnotic condition, the patient's consent should be obtained, but he ought on no account to know *when* it is to be done, otherwise, in most cases, it would foil the attempt.

In 1829, Cloquet amputated the breast of a woman magnetized by Chaplin; Elliotson, about 1843, reported a number of cases of surgical operations without pain, performed on patients while in the mesmeric state. In 1845 Loysel amputated a leg; in 1846, he removed a collection of degenerated cervical glands. Broca and Follin opened an abscess in a woman put to sleep by hypnotism. Guerineau, of Poitiers, amputated a thigh during hypnotic anæsthesia. Esdaile, a surgeon in the British East India service, has written a small book on the practical application of mesmerism in surgery and medicine, in which he reports a large number of operations successfully performed without pain during the mesmeric or hypnotic state.

The question to be considered is whether we have not in our ordinary anæsthetics a surer, safer, and swifter method of producing anæsthesia than in hypnotism. Our present experience has not demonstrated that we have, and it remains for future investigation to decide.

We have endeavoured to give a general view of the subject of hypnotism—its origin, history, operative procedures, dangers, phenomena, applications, etc. Of the genuineness of many hypnotic phenomena we can no longer doubt. Sufficient evidence of this has, we think, been collected in the present paper. Some, at least, of those who have investigated this subject with the expenditure of much time and labour, are above the suspicion of intentional deceit. Some of the names we have mentioned are to us a sufficient guarantee of the good faith of the investigators. While believing this, we feel that we must be careful neither to mislead nor to be misled. We are fully in accord with the sentiments of that eminent neurologist and alienist, Dr. J. Crichton Browne, who, in a recent communication to the *British Medical Journal* (August 27, 1881), in reference to Dr. Beard's experiments in hypnotism, speaks as follows:—

> "All experts are agreed that certain curious phenomena which have been designated hypnotism are witnessed under exceptional circumstances in certain animals and human beings; but most experts are equally well agreed that much that has passed as genuine hypnotism has been rank imposture. No practical physician with a knowledge of nervous disease can read the literature of hypnotism, or critically watch a series of hypnotic exhibitions, without arriving at this conclusion. The difficulty is to eliminate the imposture and determine what remains. The process of elimination must, I presume, be carried on by the ordinary methods by which error and falsehood are disengaged from truth. Testimony must be sifted, evidence weighed; and hence the paramount importance of determining the credibility of persons who manifest hypnotic phenomena, a large majority of which may be successfully simulated."

We are also equally in accord with him in the conviction that hypnotism ought never to be resorted to for amusement, or the gratification of curiosity, and its employment for scientific purposes should be as guarded and economical as other experiments on living animals. We cannot, however, entirely agree with him that it is demoralizing and dangerous to those who practise it, if its practice is carried out under proper limitation by judicious physicians. The experiments of Heidenhain, successfully conducted upon several healthy and intelligent students and physicians, show, moreover, that "hysterical girls, effeminate youths, and credulous adults," are not the only subjects who are capable of being hypnotized.

C. K. M.

ART. XVII.—*Artificial Anæsthesia and Anæsthetics.* By HENRY M. LYMAN, A.M., M.D., Professor of Physiology and of Diseases of the Nervous System in Rush Medical College, Chicago, Ill., and Professor of Theory and Practice of Medicine in the Woman's Medical College, Chicago, Ill. Wood's Library of Standard Medical Authors. 8vo. pp. 338. New York: Wm. Wood & Co., 1881.

THE author introduces this work with a very brief and very modest preface. He has endeavoured "to distil into its pages all the excellences of the writers who have investigated the subject of Artificial Anæsthesia." To this, he regrets to say, he has been unable to add anything of substantial value, and for "the inequality and insufficiency of a work performed without access to any library of importance he asks the forbearance of a generous profession."

It is an invidious task to criticize a work in which criticism is thus deprecated. Nevertheless, the subject is one of the highest practical importance, every new work upon it is a matter of deep interest, and duty demands an examination of its merits.

The first question suggested by the open confession of the preface is, as to the right of any one, in this busy age of the world, when the press pours forth a constant stream beyond the power of any one to master, to occupy precious time unless he has something of value to offer. Granted, that it be not original work, but a presentation of the work of others, especially of foreign writers, as the author states this to be, then we have a right to demand that the subject be well presented, and that one principle should scrupulously reign throughout—that of giving due credit to all the sources from which the matter has been derived. The general credit of the preface is not sufficient; it is as unsatisfactory as Franklin's proposition to ask a blessing over the provisions as they came into the house in barrel so as to save daily repetitions. Readers ought to know what in the book is taken from Perrin, and Snow, and Simpson, Sansom, Anstie, Turnbull, Kappeler, and Rottenstein, all mentioned in the preface. Unfortunately they cannot tell from how high or how low a source many of its statements are derived. Sometimes credit is given and sometimes not, and frequently we are at a loss and cannot give praise to the author when he most probably deserves it. For instance, connected with the subject of ethylic bromide there are a number of sphygmographic tracings distinctly stated to be the author's own. Although this remedy is shelved and not of present interest, they constitute good work, original, creditable, and show careful and close study of the subject. But connected with the subject of chloroform there are a great many more observations which we presume are the author's, but he does not say so. He is quoting freely from Kappeler as he introduces them, and we only infer the work to be original. It is the same with the tracings of the effect of ether; it is not clear whether they were made by the author or were taken from the report of the Committee of the British Medical Association.

A natural result of writing a work drawn entirely from other sources, is a want of positive statement, of clearness of expression, and that tone of authority which comes from long practical study of, and familiarity with a subject. We find no exception here. There is none of that inspiration in the pages of this book which imbues the reader with the feeling that he has found a counsellor for difficult points, a reliable guide to lead him along difficult places. Almost every fact connected with anæsthesia and anæsthetics can be found somewhere in its pages. The doctrines are generally sound; yet we fail to find that clear distinction between the known and the unknown, that emphasis of points of prime importance, and that regular and systematic presentation of the subject so necessary in a scientific treatise, and indispensable in a text-book. Instances will be given as we proceed.

We think the author has been very unfortunate in the arrangement of his matter, and in the amount apportioned to each subdivision. After a chapter of eight pages on history, very good as to American actors and as to those who were on the verge of the discovery, he enters at once into the phenomena and physiology of anæsthesia, and continues the subject in general through the next ninety pages. The individual anæsthetics are then taken up and described one by one, occupying the remainder of the book. The reverse is the natural method, and one almost indispensable to the student. To chloroform there are devoted ninety-six pages, to ether only twenty—amounts out of all proportion, in our opinion, to their relative importance in professional estimation at the present time. Indeed, it is impossible to make out from this work that there is any very wide difference of opinion existing in the profession as to the relative merits of ether and chloroform. The dangers of chloroform and the superior safety of ether are clearly stated, but it is nowhere indicated that there are in our country men of very large experience who are enthusiastic advocates of chloroform, or that there are cities and sections in which it is utterly banished from use, and where a resort to it would be held almost if not entirely criminal.

The opening chapters on the phenomena and physiology of anæsthesia are extremely interesting reading, and furnish instances of some of the faults to which we have alluded. There are some most important chemical observations bearing upon the mode of action of anæsthetics, with which the name of Prof. Walter S. Haines, of Chicago, is associated, as to the effect which various gases and vapors exert in preventing molecular combinations which would take place were they absent. To these follow Bernard's observations upon the effect of anæsthetics on fermenting liquids, germinating seeds, and the phenomena of plant life, and then follows a consideration of the subject of sleep, all undertaken to elucidate the mode of action of anæsthetics in the human economy, a branch of the subject to which the author devotes very considerable attention, but we cannot think him always happy in making the matter clear or in being always consistent with himself. Thus we read that

"The only thing that seems beyond dispute is the fact that anæsthetic substances *tend to diminish the ordinary freedom of chemical change of matter.*" (p. 17.)

But again, that "Like alcohol and chloroform—in short, like all other anæsthetic substances—ether, by the first contact between its molecules and the molecules of tissue-protoplasm, *produces a liberation of motion in the tissues.*" (p. 280.)

In treating of chloroform we are told that "It is, in the present state of science, useless to discuss the nature of the process by which chloroform and other anæsthetic substances act upon the molecular constitution of the cellular elements of the nervous tissues" (p. 113), and "As for the changes that may be produced in the tissues themselves by the action of chloroform transported to them through the medium of the blood in the living animal, our knowledge is purely hypothetical" (p. 112). On page 27, in answer to the question, "How do anæsthetics act upon nervous tissues?" the author answers: "Reasoning from analogy, it has been suggested that they coagulate protoplasm, somewhat after the manner in which alcohol acts upon albuminous substances outside the body. But coagulation is not compatible with life, consequently it is hardly probable that this can be the mode of motion." On page 234 he says, "The hypothesis of Bernard, who attributed the effects of anæsthetics to a brief and partial coagulation of the protoplasmic elements of the tissues, is probably nearer to an expression of the facts." The last quotation is taken from the chapter on the physiological action of alcohol, which occupies nearly thirty pages, and from a study of which the author thinks we can find "a key to the action of anæsthetics and a reason for the difference that exists between them in the matter of danger." He then continues and thus clears up the obscurities of this difficult subject.

> "The truth of the matter, however, lies deeper than this. The cause of anæsthesia is to be sought among the modifications to which the movements of the molecules of protoplasm are subjected when exposed to the influences contributed by the heterogeneous movements of the molecules which compose the anæsthetic substance. In their normal condition the vital phenomena of living protoplasm are dependent upon the permanence of a certain moving equilibrium in which all its constituent molecules take part. If this equilibrium be disturbed by the removal or suppression of certain of its factors, a lower degree of complexity in the movements of the molecular congeries is the consequence. This implies a lower grade of vital manifestation. . . . If the anæsthetic contains a constituent element which cannot under any circumstances enter into a *moving* equilibrium with the other elements of living matter, but which can only be associated with those in a *stable* equilibrium, then we find added to the dangers arising from over-crowding—the *mechanical* dangers—a new form of danger arising from incompatibility." (pp. 235, 236.)

In describing the action of chloroform and the sensations experienced under its administration, the author has done himself more than injustice by copying bodily from Kappeler without any quotation marks or any credit. Page 119 of this work is a transcript line for line, and with a few omissions, word for word, of page 19 of Kappeler's.[1] We will do Dr. Lyman the credit of saying that, had he taken a page from the book of nature, had he written his own observations, he would have made a better description than by trying to follow closely in English the rugged construction of the German language.

In the section on the administration of anæsthetics the directions as to the preparation of the patient and precautions during the process are clear, and good, and complete, with one exception. The author fully recognizes two sources of danger not always appreciated, the great danger of sudden variations in the strength of the inhaled vapor, and that arising from partial anæsthesia, especially when the surgical procedure is sharp and sudden, as in tooth-drawing. The first is not impressed as strongly, we think, as it ought to be for the benefit of the beginner, but, as in regard to some other points, there can be found at another point in the book something more in regard to it. Thus, on page 195 there is a little table which furnishes the emphasis; it shows thirteen deaths immediately after the addition of a fresh supply of chloroform to the sponge! In regard to the second, we are told, on page 48, that in order to avoid this danger, "etherization should always be carried to the abolition of the cutaneous reflex manifestations;" on page 73, in the chapter on anæsthesia in dentistry, it is said that "when only a single tooth is to be drawn, if ether is employed, it is unnecessary to proceed to the stage of complete unconsciousness." The apparent contradiction may possibly be reconciled by the discovery that the author has an unfortunate practice of using "etherization" when he means the production of anæsthesia in general.

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[1] Deutsche Chirurgie; Lieferung 20; Anæsthetica, Stuttgart, 1880.

Indeed, we do not find here, as in a preceding part of the book, that comparison of ether and chloroform, that contrast between their effects, with those clear indications of the modifications to be made in the administration, as one or the other agent is used, which are so desirable, if not necessary for the student. While the general course of anæsthesia is about the same with both, there are wide variations in individual symptoms under each which should be clearly pointed out. Cough, for instance, is of comparative slight importance with ether from its irritating properties to the respiratory mucous membrane; with chloroform it shows at once that the patient is breathing air too heavily charged with vapour. It is the same with stertorous respiration, and so with suffusion of the face, while there is the widest difference as to the admission of air. In giving ether, at a certain stage of the process, air should be entirely excluded for a time, a most dangerous measure with chloroform, and the best ether inhaler is one in which the patient breathes out of and into an impervious receptacle, a point which we do not find mentioned. Nor are the practical difficulties of etherization pointed out as we think they should be for the benefit of the student, nor is there any mention of the fact that some patients cannot be brought under the influence of ether; instances of which are given by Kappeler.

We think the author's surgical brethren of the city in which he resides will scarcely thank him for the representation on page 30, that the ordinary precaution of confiding the administration "of even the more dangerous anæsthetics" to one competent person, whose sole duty it shall be to attend to it, is "often neglected," that this important duty is "confided to the junior assistant—perhaps to a student scarcely out of his teens—a youth without experience and without any adequate comprehension of the real nature of the process in which he is engaged." On the next page, speaking of patients who resist the anæsthetic, it is said that "it is not uncommon to see a half dozen assistants throwing themselves upon the struggling form of their victim, while several youthful doctors deluge his head and face with a shower of ether—perhaps even chloroform may be discharged upon him with equal liberality." We regret to read this in a book which, abroad, may be taken to represent our country on the subject of anæsthetics. It certainly cannot be true, although the author writes as if he frequently witnessed it. We have personal acquaintance with some surgeons in Chicago, and know them, as we know others from reputation, to be the peers of any men anywhere, and feel positive that they do not permit such disgraceful scenes, and that they fully appreciate and practise a precaution which is now observed everywhere. The fact is, the author's remarks apply to a former period of anæsthesia; they have not been true of this country for more than a decade at least. The explanation of their appearance here we believe to be the unfortunate manner in which the book is made up, by copying here and there from different writers of different periods.

We have yet to note the exception to the precautions directed to be taken in preparing for anæsthesia. It is an important one. Within a few years past Dr. Emmet has called the attention of the profession to a connection between accident from the inhalation of ether and the presence of albuminuria in the patient. The proofs are so strong, the published cases so numerous, that no one is justified in administering ether without a previous examination of the urine, unless circumstances will not permit the delay. We find no mention of this point in the book.

We are glad to find a full recognition by the author of the fact that all anæsthetics are dangerous, and that death has been occasioned by each of them. He is not one of those who has his pet agent, and when an accident is reported from it, will resort to any amount of quibbling to throw the responsibility upon something else. He gives a pretty full collection of the deaths which have been reported under ether, amounting to twenty-seven in number. The list, however, does not contain the case which occurred to Dr. Dandrige, of Cincinnati, which, considering its recent occurrence and its proximity to the author, is surprising. There is, however, no classification, critical examination, or analysis of these cases of death, in order to show how much of the catastrophe was really due to the anæsthetic and how much to the operation or other influences. This is also true in regard to the deaths under chloroform, of which he gives a list of 393, as against 370 in Dr. Turnbull's work. The publication of these deaths, as here given, is utterly valueless for scientific purposes. They are incomplete and indefinite, some of the reports extending not even to two lines. Cases of death during such operations as ovariotomy and amputation of the hip-joint figure as deaths from chloroform, and cases of self-inhalation or of administration by a nurse or dentist are counted as of equal value with those in which the remedy was given by skilled hands. The injustice of this is apparent, and we shall return to it. Nothing will yield a richer return to any one who undertakes it than a careful study of the deaths which have occurred from this anæsthetic. But, in order to yield any benefit, it must be a study. The facts must be weighed, not merely numbered, and we look upon the lack of this here as one of the most important failures of the book.

As an instance of the extreme brevity with which some most important points are passed over, we give all there is in the book on the administration of anæsthetics during the shock of injury.

> "For the same reason (extreme cardiac debility), anæsthetics should be avoided during the period of shock after severe injuries. The respiratory centres in the medulla oblongata may have been damaged by the violence of concussion, so that they are no longer in a condition to tolerate the additional effects of artificial toxæmia. Hence the wisdom of the surgical rule to defer operation until the establishment of reaction." (p. 49.)

This is followed by the statement that "the experience of military surgeons is unanimously in favour of the almost unrestricted use of anæsthetics in the surgery of the battle-field," and this is all there is to be found in the book upon this most important point, and one in regard to which the young practitioner finds the greatest difficulty in reaching a decision. But this is not all; when an author places himself in opposition to his professional brethren, he owes it to himself and to his readers to present either arguments or proofs to sustain his position. Turning to such surgical authorities as we have at hand, we cannot find that "surgical rule," the wisdom of which is alluded to above. Gant, and Savory in "Holmes' System," alone reject chloroform in shock, and they do not mention ether.

But, on the other hand, Holmes, in his "Manual," Gross, Erichsen, and Bryant, distinctly advocate the use of chloroform in shock, some of them claiming that its depressing effect is not so much to be feared as that of further pain, and some that the pulse will rise under the use of even this anæsthetic. Agnew advocates anæsthesia during shock, decidedly preferring ether; while Ashhurst advises a cautious use of the same agent, watching effects. We believe these authors furnish the text-books of nineteen-twentieths of our students.

To the medico-legal relations of anæsthetics the author devotes eighteen pages. The mode of examination of a case of suspected death by suicide or otherwise, is very well detailed, and what, or how little, is to be learned from a *post-mortem* examination given from, and duly credited to, Caspar and Tourdes. This branch of the subject contains three principal subdivisions, all of them important and of the greatest practical interest. They are: the responsibility which attaches to the practitioner in the choice of the agent used; the possibility of the administration of chloroform to sleeping persons; and, assault upon females while under the influence of an anæsthetic. In regard to the first, there is of course no longer question that chloroform is a much more dangerous agent than ether; on the other hand, it is effective, rapid, and reliable, and pleasant to the patient, while ether is more difficult of administration, far more unpleasant to the patient, and out of all proportion accompanied and followed by unpleasant symptoms. The greater amount of danger incurred by the use of chloroform has not been and can never be stated accurately in figures. The profession is, therefore, divided in regard to the use of the two agents; in some cities and sections chloroform is utterly banished, in others ether is not used. Under these circumstances there is a question of responsibility—not only of moral responsibility which every man must decide for himself, but of legal responsibility, which the profession must be prepared to meet. To writers upon anæsthetics, to those who take position as authorities, we must look for guidance, or for such clear expression of opinion as will serve us for defence in case of accident, or show us that all the weight of doctrine and custom as to anæsthetics is against us. Dr. Lyman opens this inquiry and marches up to it boldly. "Are all anæsthetics possessed of properties which may render them dangerous to life? And are these dangers so far inevitable that in no individual case can they be foreseen and in some measure avoided?" Then, having asked these pertinent questions, he—does not answer them; not squarely and fairly, as they deserve to be answered. On the next page (81) we read that "all anæsthetics act by the development of a tendency to death," and "to continue to employ certain articles without restriction can only be deemed unjustifiable and culpable." Why not say chloroform, if he means that agent? Turning to another part we find something more upon this point, of which we italicize a portion:—

> "The verdict of experience is decisive, and the dangers of anæsthesia are known with a degree of precision sufficient to render the administrator responsible for all accidents which may be foreseen, as a possible, if not probable, consequence of the physical condition of the patient, and *of the nature of the agent selected for the production of insensibility*." (p. 51.)

Well and good; no fault can be found with any one who, after careful study of the subject, shall take this position. But is there no word to be said in favour of chloroform? In this country there are cities in which this agent is almost exclusively used; there are men who make deliberate choice of it for daily use with full knowledge of its dangers; nor are they mere theorists, but men whose experience extends to tens of thousands of administrations, who are as honest, as intelligent, as conscientious as any advocate of ether, and who are enthusiastic in support of it as being the best anæsthetic. Is the testimony and the experience of these men to go for naught as to a justification of the use of chloroform? And are there not circumstances which would justify the use of chloroform, such as, for instance, the inflammability of ether, and the consequent danger in operations by artificial light? And if chloroform be so dangerous, and the danger is not entirely abolished by using mixtures which dilute it, as has been certainly shown by experience, then is it justifiable to use a mixture containing any proportion of chloroform? Or, in other words, will very great practical advantages justify a man in exposing a life to any, even if it be very slight, danger? These are questions which we think ought to be broached, fully considered, and carefully answered by any writer who now undertakes to present a complete treatise on anæsthesia and anæsthetics. We do not find them here.

In regard to the possibility of the administration of chloroform to sleeping persons without wakening them, the author quotes from Dolbeau and from Drs. Cluness and Quimby, of this country, giving in all fifteen cases in which the attempt was successful and thirty-three in which it was unsuccessful. In one of these quotations we find the truth stated, that chloroform can be thus successfully administered, but only by one skilled in using it. The author himself gives no summing up, strikes no balance between the successful and unsuccessful cases, and expresses no opinion on the subject which would aid an advocate in prosecution or defence.

In regard to alleged criminal sexual intercourse when the woman has been anæsthetized for an operation of some kind, due attention is paid by the author. That erotic sensations are sometimes excited by anæsthetics, especially by ether, is fully recognized, and plenty of cases given for the defence of any one accused. Upon this point, however, it can only be said that after the amount of experience published in regard to this matter, if any one can be found hereafter fool enough to administer an anæsthetic to a female without other persons being present, he deserves no defence! Upon the administration of the anæsthetic as an aid in the criminal assault, we find the author far from satisfactory. He devotes not more than a dozen lines to this very important point. Most justly does he say that "the fact of intercourse should be established by evidence more satisfactory than the mere assertion of the woman;" but he fails to point out a principle which, we believe, underlies these cases, and which may serve as a sure and reliable guide. Let us take a case from real life: the prosecutrix swore that when in bed the prisoner gave her something by inhalation which she believed to be chloroform, and then had intercourse with her. *She swore to sensations and penetration.* She was within easy call of other persons, yet swore that *she could not cry out or make any resistance.* Now, in our opinion, this was a clear and easy case for the medical expert. He could swear positively that under anæsthetics, sensations of touch and of pain are abolished before the power of resistance or of making outcry. Too often, on the witness stand, are we obliged to admit uncertainty and variability of the action of medicines. When we can swear with positiveness upon any point, we may prize it as a jewel of rare value. This is one of the jewels. Not so the author. Turning again to another part of the book, we find the following, which we italicize:—

> "*By an effort of the will the progress of anæsthesia may be delayed. By such effort, and even without apparent effort, perfect intelligence may often be maintained for a considerable period after the loss of the power of perceiving painful sensations.*" (p. 11.)

This is dangerous doctrine. We do not believe it. It will send innocent men to the penitentiary. We protest against it, and we base our protest and denial upon all our experience in the administration of anæsthetics, and upon what we believe to be a very considerable experience in inhaling it personally. This doctrine must have been derived from the early and mythical age of anæsthesia, or if there be possibly any foundation for it in fact, it is only furnished by cases so rare and infrequent as not to affect the general rule.

To artificial anæsthesia in obstetrical practice the author devotes four pages in which we do not find the impress of any practical experience. He justifies anæsthesia in labour by the reasoning that "really normal labour is not a painful process;" that "in civilized society the majority of mankind are living under quite abnormal conditions;" this entails pain, and we no longer have to deal with natural labour, and, therefore, may give chloroform. So that Rome is reached at last it makes little difference what road is travelled! As to the choice of an anæsthetic, it is chloroform of course, except when complete anæsthesia is to be produced, when, he says, ether should be preferred. Also—

> "For the relief of convulsions it is necessary to produce complete anæsthesia. This should be effected by the inhalation of ether." (p. 71.)

This is new doctrine, as chloroform has long been considered one of the most reliable remedies for this accident of parturition. Further on we find its value duly appreciated and stated:—

> "Puerperal convulsions may in like manner be arrested by the active employment of chloroform. . . . The symptom *convulsion* is due to an over-excitable condition of the convulsive centres in the upper portion of the medulla oblongata and its protuberance. This inordinate irritability is promptly subdued by chloroform." (p. 115.)

The author rejects all the explanations which have been given to account for the immunity of women in labour from accident under anæsthetics, and ventures one himself, which is that "the greater immunity of these patients is probably due to the fact that they are selected patients, as it were. Young women in the prime of life, at an epoch when all the nutritive functions of the body are at their highest degree of activity;" an explanation which is as unsatisfactory as any of the others when read by the light of the table of deaths from chloroform given on page 194. Of 255 deaths, 147, or 57 per cent., were in patients under 35 years of age!

In connection with deaths from chloroform during labour, there are one or two notable points. As before said, it is but in accordance with the plainest principles of justice that a remedy should not be held responsible for accidents which may have followed its use in incompetent hands. Yet chloroform has had that injustice done it, and the injustice is perpetuated here. In the tables of death of several authors "two during natural labour" have been repeatedly given, evidently copied one from the other. The writer undertook the task of finding these two cases, but for years without success, until, finally, after much inquiry, he took the ground that no death from chloroform during natural labour had ever occurred, *the agent being administered by a competent medical man.* Not until the appearance of that admirable work the Catalogue of the Library of the Surgeon-General's Office, could he succeed in finding any reference to the two cases above referred to. They are found here in Dr. Lyman's book with four others; the summing up being: "Death was caused on six occasions by the inhalation of chloroform during the pains of natural labour." We will examine them in order to illustrate the injustice done, to which we have already alluded, by a mere statement of so many deaths from chloroform in such and such circumstances. The first, No. 57, was a case of self-inhalation, no physician present. Nos. 79 and 80 are the original two so long sought for unsuccessfully; the former is the exact counterpart of No. 57; the latter is merely mentioned by Dr. Matthews Duncan, and so devoid of particulars as to be of no scientific value whatever. The next, No. 327, occurred at Lyons, was a shoulder presentation, therefore not a case of natural labour; the chloroform was given for version by a nurse. No. 328 is reported by Dr. Cotting in this country; it was a case of convulsions, again not a natural labour; "after the delivery of the head the patient shuddered (that is, had another convulsion!), her pulse ceased, and she was dead." Here are five cases; the sixth is the last of the author's list, No. 393, and bears the date of March, 1881. It seems to be a genuine case of death during natural labour under chloroform administered presumably by a competent medical man! It seems wonderful that so important an addition to our knowledge, a case unparaleled in all the time during which chloroform has been used, should be presented by the author without comment, or without a word to indicate that it is different from the vague and distant cases we have just given. But so it is. Moreover, we have not even a full and complete report of the case. It occupies only twenty lines: "the physician allowed her to inhale, intermittently, a few drops at a time. She did not become unconscious, and at the end of ten minutes began to complain of a sense of thoracic oppression and dyspnœa, . . . she frothed slightly at the mouth; the cheeks were blown out in expiration, and, after half a dozen sighing respirations, she ceased to breathe." We are not told whether this is the original report of the case, the whole, or any part of it. It is credited to Wallace K. Harrison, but without reference to any journal or source where the original report may have been made. This, to any one making a close study of the subject, is, to say the least, provoking. We feel it to be so because it was our fortune, or misfortune, to meet with a death during labour presenting almost identical symptoms, in which no anæsthetic had been used. It was in days before anything was known of pulmonary embolism, and we attributed it to heart disease, but, as in the case above, no post-mortem examination was allowed.

The modification of the anæsthetic process by a preceding hypodermic injection of morphia receives due attention, but it consists of a detail of the experience of those favourable to it, and of those who have been unsuccessful with, and are opposed to it, without any comment of the author's, or any expression of opinion as to its value. The student could not gather from this book that this was very much of an addition to our practical knowledge. Kappeler's opinion as to the bad effect of morphia injections before ether-inhalation is given, but no attempt made to clear up or add to our knowledge of this unsettled point in the realm of anæsthetics. Our experience, using a mixture containing one-half ether, has been so directly contrary to Kappeler's that we looked for more light upon the subject with deep interest. Mixed vapours receive but scant attention, and are dismissed with the old, old, and we feel compelled to say, frivolous and puerile objection, about the different rate of evaporation of their constituents! as if during administration by a skilled or intelligent operator vaporization would go on as it does when the mixture is poured on a cloth!

The author has presented a full account of the various minor and little known anæsthetics, he gives evidence of careful study, physiological however rather than clinical, and of a full acquaintance with the literature of the subject. We deeply regret that we cannot estimate higher the manner of execution of the work. J. C. R.

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The work of the society comes to us in its usual dress; but the interval of almost a year, from the reading of the papers until their appearance in print, will have a tendency in the future, to divert valuable matter to other avenues of publication, unless authors can be assured that promptness will be secured for them hereafter. The fault, we are told, lies very largely at the doors of the writers themselves, who either present their articles in an incomplete form, or are a long time in their final preparation for the press. If this is so, there should be a rule enacted, to the effect, that all articles should be fully prepared for publication before being read, and be at once presented to the secretary for the volume. The President in his annual address shows a great anxiety to enlarge the list of Fellows: perhaps it would materially aid this, if the medical writers of our country could be made to feel that their papers, if presented before the society, would be promptly distributed to the profession in printed form. In these days of surgical progress, it is important that many clinical and other records should be published promptly, or they will fail largely of their object. Those making researches feel this, and cannot be expected to use a medium which is not only of limited circulation, but slow in publication. The so-called exclusiveness of the Gynecological Society, and its exacting ordeal of admission, will weigh but little with those having the requisite qualifications, provided they can be satisfied to give up valuable articles to their medium of publication as one prompt in action.

What is the Proper Field for Battey's Operation? by Robert Battey, M.D., of Rome, Ga., is the title of the first paper. However much this operation may have been abused and improperly applied, it can hardly be said that its originator has given countenance to its too general application. Contemplating the propriety of the operation for six years before performing it, Dr. Battey has always contended that it should ever be regarded as a final, and almost compulsory expedient for relief. Since its introduction nine years ago, Dr. Battey has performed but few operations compared with those of Alfred Hegar, Lawson Tait, and some others in Europe; and he now expresses his views as follows, upon the necessity for this form of mutilation, prefacing them with the remark that the ovaries should only be sacrificed for grave causes, and as a last resort. 1. The operation is required in cases of congenital absence of the uterus with functional activity of the ovaries, resulting in fatal heart disease by reason of a menstrual molimen unrelieved by menstrual flux. 2. Where there is an occlusion of the entire genital tract, as a sequence of labour, where restoration of the outlet has been found impracticable. 3. Cases of menstro-mania, where all other remedies have failed. 4. Ovarian epilepsy, in which the convulsive action is evidently due to a disease of the ovaries, or to some abnormal condition of ovular action. 5. Certain forms of chronic inflammation of the ovaries, attended with severe pains, and nerve disturbances, at the menstrual period. 6. Amenorrhœa with grave disturbances of the nervous system, unrelieved by the menstrual function or by medical treatment. 7. Hernia of the ovaries into the inguinal canal, or into the labia, disabling the woman by excessive sensitiveness, pain, and suffering. 8. Large submucous and interstitial fibroids, accompanied by dangerous hemorrhages. 9. Certain incurable flexions of the uterus, attended with grave consequences requiring relief. 10. Deformities of the pelvis endangering a necessity for the Cæsarean operation. Dr. Battey regards the removal of the ovaries as likely to add but little danger to the Cæsarean operation. This expedient has been tried but once in the United States, in a patient upon whom the Cæsarean section was being performed for the second time. The woman died of peritonitis in ten days. Ligating the Fallopian tubes has been performed with better success.

Dr. GEORGE J. ENGELMANN, of St. Louis, reports two cases of this operation, for "*Anterior Displacement of the Ovary, simulating Inguinal Hernia.*" He shows this to be a rare form of displacement, very few cases having been reported. *Case* 1. An American girl of twenty-four, much emaciated and inclined to melancholia. Health been failing for five years, but particularly for half this period, since a fall on her feet from a second story window. Suffered severely at each menstrual period since the fall, directly after which, a swelling in the groin appeared, which has always been most noticeable during the catamenial flow, at which time she can scarcely walk, and is often obliged to keep her bed, as she is unable to straighten her left leg. She had been under a variety of medical treatments, but to no avail. The removal of the ovary gradually restored the health of the woman, and she was able to resume her position as a servant in about three months. *Case* 2, was of the right ovary in a married German woman of forty-six. She had never conceived, was always delicate, and had been thought ruptured by injury, at the age of three years, and had worn a truss interruptedly from that age to about forty. When about twenty-one, she increased her disabilities by a fall in a sitting position, since which time her sufferings have been aggravated, especially those of a nervous character. She has become melancholy; has hyperæsthesia of the skin, so that at times she cannot bear any pressure from her clothes; has a feeling of pressure and irritation in the rectum; is nervous and careworn; suffers with pelvic pains, insomnia, and mental troubles. She had been under the care of physicians here and in Europe, but had experienced no decided relief. An examination revealed enlarged nymphæ, a narrow rigid vagina, and a retroverted uterus; right ovary distinctly felt anterior to the womb, sensitive, and little if at all enlarged; examination very painful; sounding uterus gave suffering in the rectum, which, when explored, gave no evidence of disease. Left ovary not dislocated, but over-sensitive. Being near the menopause the removal of the right ovary was not urged, and in fact it gave but little hope of success. Later in the history of the case her irregularity in menstruation indicated its approaching cessation, and with it, there was a diminution of suffering, and the ovary no longer descended as in former times, under straining or position.

Dr. Engelmann favours decidedly the removal of the ovaries when required, by incision through the *linea alba*, instead of the vagina; or in cases of hernia, instead of the groin. Dr. Barker had met in practice with three cases of anterior displacement of the ovary, and in them there was no history of a fall: he inclined to the belief that such displacements were congenital. Dr. H. P. C. Wilson reported one case in which he proposed shortly to remove the displaced organ, as it had not been relieved by therapeutical and mechanical means. Dr. Byford had removed a hernial ovary twenty-five years ago, not knowing the nature of the tumour until he had opened the sac. The case resembled the first of Dr. Engelmann, and recovered. He believed that in all cases requiring Battey's operation, the ovaries would be found diseased, either cystic, smaller than natural, or congested. Such had been the case with those he had removed. Dr. Thomas Wood reported the case of a lady who bore three sons and three daughters after he had removed one ovary for disease; and another in which he had six years before removed the entire uterus; leaving the ovaries so as not to change her sexual character, which he believed in a measure dependent upon their presence. With regard to the establishment of the menopause, and the effect of oöphorectomy upon uterine fibroids, Dr. Battey, in answer to inquiries, replied, that in all of his fifteen cases, where he had removed both ovaries, the menopause had been established: but that where he had only removed one ovary, menstruation continued. Theoretically, we should expect, by the diminution of the influx of blood into the uterus, to produce a gradual reduction in the size of fibromata: but practically this result is uncertain. Hegar, after forty or fifty operations, believes in their atrophic effect upon this class of growths. Lawson Tait confirms this opinion after having had 31 operations.

Dr. BYFORD reported *The Successful Extirpation of an Encephaloid Kidney.* The subject was a German woman of 39, living in poverty and operated upon in hospital. The diagnosis was a difficult one, but negative evidences inclined the staff to believe the abdominal enlargement due to renal growth, which, under an exploratory incision, proved to be the case. The kidney was removed under carbolic spray, and weighed 4½ pounds: this was on March 14, 1878. Woman gradually recovered her health, and in time became stout and florid. Two years after the operation she appeared to be in perfect health, and nothing abnormal could be felt in her abdomen or pelvis. The ascitic fluid in this case was thought by Prof. Danforth to present the ovarian cell. Dr. Drysdale said he had seen a cell that resembled that of the ovary; it was the *pyoid* cell of Lebert: he had always been able to distinguish between it and the true ovarian.

Dr. A. REEVES JACKSON, of Chicago, advocates *Uterine Massage as a Means of Treating Certain Forms of Enlargement of the Womb.* As this is a new method of treating that obstinate condition, hyperplasia, either of the whole uterus, or the body alone, we will give the author's own description of the processes, abdominal, abdomino-vaginal, and abdomino-rectal.

1. *Abdominal Massage.* "When the enlarged uterus can be felt sufficiently above the pubes to enable any part of its walls or fundus to be grasped between the fingers, very efficient massage may be done without invading the vagina, and this method should be preferred in all such cases, provided the vagina is small or unduly tender. The bladder being previously emptied, the patient should lie

upon her back upon a table, or upon a hard unyielding mattress or lounge. The operator then, using both hands, commences by picking up and rolling between the thumb and fingers portions of the skin and other superficial tissues. The entire abdominal surface as high as the umbilicus is thus manipulated. The process is then repeated, the deeper tissues being this time taken up and pressed between the fingers gradually increasing force being employed. These pinchings are alternated with rubbings of the surface with the palms of the outspread hands and the points of the fingers. After five or ten minutes have been spent in this manner, the fingers are sunk deeper into the hypogastric and ovarian regions, and the uterus, so much of it as can be reached, is brought between their tips. The organ is then alternately squeezed and relaxed and rolled between the fingers in every possible direction for twenty or thirty minutes, or until the patient becomes weary.

"All the foregoing processes must be performed in the gentlest possible manner, all increase of force employed being so gradual as to be almost imperceptible.

"In whatever manner the massage is employed, this preliminary manipulation of the abdominal walls is advisable, and sometimes indispensable; for in many cases the pains and discomfort complained of by patients who have enlargement of the uterus, and which are likely to be referred by them to that organ, really have their seat in the walls of the abdomen, and unless these latter become accustomed to the massage, which almost invariably lessens the sensitiveness, it would be impossible to act effectively upon the uterus beneath. I have no doubt on this point; for in some instances several days have elapsed before the tenderness of the abdominal walls could be overcome; yet, this having at last been accomplished, the uterus could be grasped and firmly pressed without causing any great amount of discomfort." (p. 86.)

2. *Abdomino-Vaginal Massage.* This form of manipulation is to be employed in cases where the uterus has not attained size sufficient to be reached by the abdominal method.

"This is performed by passing the first and second fingers of one hand into the vagina, and placing the other hand above the fundus uteri in the hypogastrium. A single finger in the vagina is not sufficient; it cannot be introduced as far as two, and is also not so useful for making pressure or counter-pressure.

"The fingers should be passed first into the space behind the vaginal portion, which is pulled gently forward, and then permitted to return to its former position. This is repeated a half dozen or more times, when the fingers are pushed higher up, so as to reach the supra-vaginal portion of the cervix and lower part of the body. The upper part of the uterus being now steadied by the hand on the outside, it is pressed between the fingers of both hands, repeatedly, for a few seconds at a time, and then relaxed. Every portion of the organ which can be reached should be subjected to these momentary squeezings. Then the manipulations should be reversed. The intra-vaginal fingers should be drawn in front of the cervix, and the latter pushed backwards several times as far as possible short of causing pain. Then their ends being passed into the space between the bladder and cervix, and their pulps turned against the latter, the fingers of the outside hand should be so adapted that the uterine body may again be brought between the compressing forces, when the squeezings and imparted movements are to be repeated as before. Alternating with the processes described, the uterus should be frequently elevated in the pelvis and held for a few seconds."

3. *Abdomino-Rectal Massage.* This, from the author's statement, must be of very limited value or application. Although a ready means of reaching the uterus for massage, the offensiveness of the method, the pain of using two fingers, and the irritable nature of the bowel, render it almost impracticable, unless it may be in very exceptional instances of dilated rectum and contracted vagina.

Attached to the paper of Dr. Jackson are the records of three typical cases illustrating the effects of the method. In case 1, where the uterus was large, soft, retroverted and tender, and measured by the sound 3½ inches, there was but very slight reduction, perhaps a quarter of an inch after six weeks' ordinary local and constitutional treatment: but six weeks' daily treatment by massage, from fifteen to forty-five minutes each, reduced the measure to 2⅞ inches, restored the uterus to a firm texture, and removed its sensitiveness entirely. In Case 2, the uterine depth was 5½ inches, which was slowly reduced to less than four, the patient recovering her health, menstruating normally, and having no leucorrhœa, pelvic pain, tenderness, or vesical or rectal disturbance. In Case 3, after massage for three months, three or four times a week, the uterus of treble its normal dimensions was diminished to a depth of three inches, and its shape and functions were restored to a natural condition.

A Case of Cataleptic Convulsions cured by Trachelorraphy is reported by R. STANSBURY SUTTON, M.D., of Pittsburg. The patient in this case suffered from a partially cicatrized laceration of the cervix, which was so sensitive that a convulsion could be readily excited by touching the bottom of the fissure, and she was subject to frequent convulsive attacks. The removal of the cicatricial tissue and closure of the rent by sutures entirely restored the patient to health.

Ovariotomy during Pregnancy is the title of a paper by H. P. C. WILSON, M.D., of Baltimore. The question often presents itself to the gynecologist, whether he shall temporize by reducing an ovarian tumour that complicates a pregnancy by repeated tappings; or attempt its radical cure by extirpation. Dr. Wilson in this paper advocates the latter, especially in the early months of gestation, as preferable to, and quite as safe as, if not eventually safer than, the former on account of the serious adhesions produced by the tappings interfering with a post-partum removal of the cyst. Besides the danger from tapping, the development of an ovarian cyst, during pregnancy, endangers the twisting of the pedicle and bursting of the cyst. Dr. Wilson reports a case in which he operated at four months, wherein he found the pedicle twisted, and clots of blood within it, which escaped when he cut it, after ligation. The patient carried the fœtus nearly to term, and the child was saved.

The statistics of ovariotomy during pregnancy, as given by Dr. Wilson, are as follows: Mr. T. Spencer Wells, 10 operations; 9 recovered and went to full term. Prof. Schrœder 7 operations, all recovered; 1 aborted, 2 delivered prematurely, and 4 went to full term. Dr. J. Marion Sims, 1 operation at four months, delivered at term; child living. Dr. Washington L. Atlee, 2 operations, 1 at two months, unsuspected. Patient had been tapped sixteen times, eleven before marriage; tumour weighed eighty-four pounds; great gastric irritability resulted, and woman died of inanition in a month. In the second case the pregnancy was also unsuspected; a sound was introduced into the uterus on the day of operation; notwithstanding which the woman bore a living child at term. Dr. J. F. Bird reports a case where there were no signs of pregnancy; patient aborted, recovered, and bore a child subsequently. Dr. A. L. Galabin operated at six months; patient delivered at term; child living. Mr. Lawson Tait operated at seven months; labour on sixth day; patient died in a few hours afterwards. Case reported by Wilhelm Baum, pregnant five months; miscarried the next day; woman had a pelvic abscess, but recovered. Dr. T. G. Thomas, 1 operation, before antiseptic measures were in use; patient died of peritonitis. Dr. G. Kimball, 2 operations, pregnancy unsuspected; existed in each case about three months; peritonitis followed each operation. In all, 29 operations were reported, with 24 women and 20 children saved.

Dr. Battey reported 4 cases in which no operation was performed. No. 1, tapped at 6½ months and seven gallons drawn off; patient left in the care of her physician, who failed to repeat the tapping; gave birth to a child at term; felt as if something had given way; died in half an hour after delivery; no autopsy; presumed rupture of cyst. No. 2, delivered at term; no tapping; died of presumed rupture of cyst, shortly after her delivery. No. 3, similar in character to No. 2. No. 4 was examined when about four months pregnant; sound introduced to determine pregnancy, and if it existed to produce abortion; the latter followed, and the patient died in a few days. Dr. Sutton had seen two cases of twisted pedicle within five years. Miscarriage occurred in both, and death followed in two weeks, and ten days respectively. Ovariotomy was performed upon one of them after miscarriage, under the belief that the pedicle was twisted; hemorrhage had occurred to a large amount into the cyst, and the patient died in seventy hours.

Judging from the opinions given in discussion, the sense of the society was in favour of ovariotomy as advocated by Dr. Wilson, an exception being made in cases where the cyst is small and can be carried without special risk from pressure.

Dr. Theophilus Parvin, of Indianapolis, contributes a paper on *Secondary Puerperal Metrorrhagia.* For convenience he adopts the limit of time given by McClintock, and calls a hemorrhage "secondary" which occurs at any time within the month, except during the first six hours after delivery. He excludes all cases in which the flow results from inversion or rupture of the uterus, and all which are not uterine in origin.

Causes.—1. Alterations of the blood: *a*, Albuminuria; *b*, Purpura; *c*, Malaria. 2. Psychical influences. 3. Direct influences: *d*, Those which prevent uterine retraction; *e*, Those which produce uterine congestion. To the first belong secondary uterine inertia, uterine fibroids, and possibly peritoneal adhesions. Among the causes of increasing uterine congestion are enumerated, metritis and peri-metritis; too early rising and engaging in household duties; too early sexual intercourse; uterine polypi; retained clots, or portions of the placenta or membranes; displacements of the uterus, especially anterior and posterior flexions and versions; constipation of the bowels; distension of the bladder; coughing; aneurism of uterine artery and thrombus of the cervix. *Methods for Relief.*—1. Uterine compression. 2. Compression of the abdominal aorta. 3. Uterine injections: hot water; solutions of salts of iron, or with the addition of chloride of sodium to render them less irritating. 4. Application of cold to the abdomen or vagina. 5. Administration of ergot. 6. Use of quinine. 7. Use of opium. 8. Use of hot baths, two days or more after delivery.

Dr. Campbell objected to the use of perchloride of iron; but favoured that of iodine, using one part of tincture to four of water through a chamberlain's tube. Dr. H. P. C. Wilson had "never been bold enough" to inject iron; had not used iodine; favoured the use of the hand as a curette to rake over the placental site. Dr. Barker had often used persulphate of iron, and had never seen a fatal result such as had been reported by others; should for the future, as safer, prefer iodine and the hot water douche. Dr. Charles Shepard favoured placing the patient on an inclined plane of 45°, head downward. Dr. Engelmann used a speculum and mopped out the cavity of the uterus under the eye, using cotton pledgets held in dressing-forceps and soaked in perchloride of iron, drawing out the clots with the cotton.

Three Fatal Cases of Rupture of the Uterus with Laparotomy are reported by W. T. Howard, M.D., of Baltimore. These three operations were performed by Dr. Howard, in 1868, 1874, and 1879, and appear in outline in the statistical record of the reviewer published in October, 1880. No. 1 had a normal pelvis; was in her eighth labour, three hours, when rupture took place; operation eight hours after rupture; died of septic peritonitis in seven days. No. 2, pelvis small; fourth pregnancy; operation an hour after rupture; died in same time and from same cause as No. 1. No. 3 was in her ninth labour, and was operated upon seventeen hours after rupture; died of shock in eighteen hours—children all dead. Dr. Howard deserves much credit for having published these cases. He seems to have been unusually unfortunate in their results, as twenty-one out of forty-one operations in this country have saved the lives of the women, and the only two ever performed in this city were successful. He regrets now that he had not sutured the uterine rent in case No. 1. He expresses a preference for the silk over the wire suture, but bases his opposition to the latter upon what is known to take place in vaginal wounds, the bent-down wire tending to rise and become perpendicular. This does not apply where the suture is intra-abdominal, as the wire becomes coated with a lymph deposit, and finally encysted, as has been proved by several subsequent examinations. If silk is used, it ought to be pure, and free from sea-island cotton. Pure silk may become absorbed; but cotton is indestructible. Sutures have been used in the uterine wound, in twenty-two Cæsarean operations in the United States. In eight of these, the women recovered. Pure silk, carbolized, and the antiseptic dressing, have been employed with success, quite recently.

Dr. Howard is inclined to recommend the extirpation of the uterus in some cases of rupture, treating the pedicle after the manner of Schrœder, and dropping it in. He states that the reviewer did not give the date and particulars of the Prevôt extirpation case. This was correct at the time he wrote his paper, but the case was then in type, and appeared in October, 1880. His proposal to remove the uterus, like that of Dr. Federico Alessandrini, of Milan, was conceived in 1879, the year after it had been done in Moscow. Since Dr. Howard wrote this paper, the pedicle in Porro cases has been ligated and dropped in several times, but never successfully. Five Porro operations have been successfully performed in order, in the Santa Caterina Hospital of Milan, saving both mothers and children; but all the pedicles were dressed externally. As the operation of laparotomy after uterine rupture in the United States has been more successful than the Porro operation in Europe (33 out of 74), we are not prepared to recommend the Prevôt method, and especially as it unsexes a woman unnecessarily, and adds greatly to the shock.

In a paper on *Occlusion of the Gravid Uterus*, Dr. Joseph A. Eve, of Augusta, Georgia, dwells upon the peculiar rarity of this form of dystocia, and quotes the records of several cases by Bedford, Playfair, Ashwell, etc. He reports one case which came under his own observation, in which he relieved the patient in labour by incising the cervix. She subsequently bore a child naturally. The occlusion resulted from the application of nitrate of silver and nitrate of mercury for erosions of the cervix.

We object decidedly to such terms as "Vaginal Cæsarean Section" and "Vaginal Hysterotomy." The true Cæsarean operation is "Laparo-hysterotomy" or "Gastro-hysterotomy." "Hysterotomy" is the operation upon the cervix through the vulva. Gardien (1816) properly separated Gastro-hysterotomy and Hysterotomy, and gave each its special meaning. There have been no less than seven cases of occlusion of the *os uteri* in the United States in which the Cæsarean operation has been performed, saving three women.

Posture in Labour, an Ethnological Study, is the title of a paper by Dr. GEORGE J. ENGELMANN, of St. Louis. It is impossible to do justice to this long article in our allotted space. Since it was presented, two other papers have appeared in print belonging to the same subject, and the series is still incomplete; the whole will form a curious and interesting volume, fully illustrated, bearing evidence of the persevering industry of its author, who has searched the world over to obtain his material. The article in the volume under review contains forty-six wood-cuts, and is made up of facts drawn from 9 European countries; 16 Asiatic; 14 African, and from North, South, and Central America, Australia, and the South Sea Islands; and is especially of interest as an exhibit of the peculiar parturient customs of many of our Indian tribes.

Dr. JAMES R. CHADWICK, of Boston, contributes a paper on *The Hot Rectal Douche.* The author was led to the employment of the rectal douche from observing the benefit of the same plan of treatment in bladder troubles, especially cystitis. The first series of cases presented in the paper were those affected with diarrhœa, either "acute or chronic, characterized by small, frequent evacuations," due to inflammation or irritation of the mucous lining of the rectum and large intestine. The four cases of diarrhœa in group 1 appear to have been soon cured by the douche. Dr. Chadwick, finding the value of the hot douche, very naturally changed from the per-vaginal to the per-rectal mode of using it in pelvic inflammations, as it could be more readily employed, and the fluid would come in more general juxtaposition with the parts involved. The injection of hot water into the rectum enables the physician to apply heat in a favourable manner, as the rectum will retain the water, and if one or two quarts are introduced, keep it in close contiguity with the peritoneum. The diseases enumerated in which he has tried it with benefit are backache and painful defecation, abdominal pains, pains referred to the rectum, pains and burning sensation in the abdomen, and pelvic effusion.

The author uses water at 110°; introduces as large a volume as possible without producing pain; and has it retained as long as possible. The patient is placed upon her side (right preferred), and a fountain syringe containing half a gallon is used, the water being slowly introduced. When she desires to defecate, stop the flow a few minutes, without withdrawing the pipe, and then resume the introduction. In this way the whole large intestine may be filled in some instances. Dr. Chadwick directs generally that the douche shall be taken two or three times a day for one or two weeks; and in some instances four or five weeks where it can be borne.

The Prophylactic and Therapeutic Value of Quinine in Gynecic and Obstetric Practice, is the title of a contribution by Dr. HENRY F. CAMPBELL, of Augusta, Georgia. Dr. Campbell, having practised medicine for a long period in miasmatic localities, has had ample opportunities for testing the effects of quinine in pregnant women, whether in labour, in threatened miscarriage, or where there was no uterine disturbance; in subjects affected with malaria, in the paroxysmal or non-paroxysmal form; or where entirely free from the influences of paludal poison. From the use of calomel in excessive doses, our Southern colleagues have stepped to that of quinine in large measures, and many of the changes in the belief of the profession of our country as to the therapeutic applicability of this remedy in fevers, inflammations, zymotic diseases, and septic affections, have originated in the discoveries of Southern physicians, whose practice in the use of quinine was at one time regarded as largely empirical. One of the earliest advocates in this city, of the use of quinine in large doses in fevers, as a contra-stimulant, in zymotic diseases and inflammatory affections, was the late Surgeon-General, Clement A. Finley, whose views twenty-five years ago were regarded as wild and visionary, although they were such as are largely believed in at the present day. Dr. Finley had been stationed at Norfolk, Virginia, and probably from experiences and associations there, formed the views he then held. To present in a condensed form the views of Dr. Campbell, we have arranged them in an aphorismic style.

1. The constant use of quinine in malarial districts of the South controverts the belief in its oxytocic properties. 2. Paroxysmal neuroses endanger the prosperity of pregnancy. Quinine should be given to prevent, instead of withheld for fear of producing abortion, as there is far more danger from the association of chills and fever with the pregnant state than from the administration of the remedy. 3. The pains of miasmatic fever often simulate those of pregnancy, and abortions in fever districts will often be found to have been preceded by diurnal or nocturnal headache, pains in the lower extremities, and recurring uterine pains. 4. Paroxysms of a local or general form without fever often threaten the continuance of pregnancy. Malaria may exist in the system without manifesting its presence by the cold, hot, and sweating stages. Cases reported where periodical uterine pains, apparently those of a miscarriage, occurred, but without fever, were promptly relieved by quinine pushed to cinchonism. Several relapses occurred subsequently, in which the effect of the medicine was always the same. 5. Paroxysmal neuroses resembling labour near the end of gestation; *typical case given*, in which there were apparently all the phenomena of the second stage of labour with expulsive efforts, etc., and yet no evidences of uterine action to the touch, the os being unopen, soft, and relaxed. These attacks recurred in a tertian type, and were arrested by quinine, the patient being delivered of twins two weeks later. 6. Paroxysmal neuroses amenable to quinine often disturb and interrupt the normal processes of childbirth. Dr. Campbell says he has never given quinine to a woman in labour at term, either to promote or retard uterine contraction in the first or second stage, but has confined its use to malarial complications present or anticipated. 7. Quinine has been found a valuable preventive of puerperal eclampsia, and a remedy in hysteria, tetanus, and (by the rectum) in infantile convulsions. 8. After labour, quinine acts so as to prevent and control traumatic inflammation. In mammary inflammations the symptoms will often appear of an intermittent or remittent type. 9. Quinine acts by depressing the reflex excitability of the spinal cord. 10. Malaria is believed to increase reflex excitability or produce morbid excitability; hence the therapeutic indication for quinine.

Dr. Campbell administers quinine invariably after parturition, whether a labour at term, a miscarriage, or an abortion, beginning on the morning of the second day, and pushing it to moderate cinchonism. When the effect is one of nervous excitement, he gives bromide of potassium for its antagonistic effect. Quinine, in some cases, produces alarming heart disturbance with sinking, and in others, attacks resembling urticaria. In such cases, Dr. C. gives bromide of potassium and opium, or substitutes salicine for the quinine. 12. Quinine has been found a valuable remedy in inflamed mammæ, abscesses, uterine tenderness, cellulitis, and tardy involution.

Laparotomy and Laparo-hysterotomy; their Indications and Statistics; for Fibroid Tumours of the Uterus, are described by Dr. C. D. PALMER, of Cincinnati, Ohio. We decidedly object to the second term in this title, as it has already been appropriated by many writers to the Cæsarean section, they preferring the *laparo-* to the *gastro-* of Gardien (1816). The author intends to convey the meaning of excision and not incision; his term should have appeared as laparo-hysterectomy. The successes of a few very prominent ovariotomists have induced them and other operators to perform much more hazardous, and much less promising operations upon the abdominal cavity, especially of women. What has been the actual result in cases where fibroid tumours have been removed from the uterus; or where the uterus itself has been exsected in the removal, it is impossible to determine, as many of the cases have never been reported. Dr. Palmer has presented a statistical table containing 38 of the first class, with 22 recoveries, and 127 of the second, with 62 women saved. Although larger than the tables of his predecessors, his collection by no means represents the whole mortality, as we know of quite a number of cases not included therein, most of which were fatal. With regard to the effect of oöphorectomy upon the growth and development of uterine fibroids, Dr. Palmer is under the impression that it usually establishes the menopause, and in many cases secures the shrinkage of the organ. He gives a table of 20 such operations, with 15 recoveries, and claims that the result was generally a favourable one. No. 1, by Dr. Trenholme, of Montreal, is given as a case resulting in the absorption or shrinkage of this tumour, but Prof. W. H. Byford reported the status of it several years later, and says:—

> "That patient is now under my care in the Woman's Hospital of the State of Illinois, where she has been for nearly a year. Her present condition is almost as miserable as it is possible for a patient to be in. She has no regular menstrual hemorrhage; but in consequence of any kind of exertion or great excitement, there is a great congestion, followed by great hemorrhage, so much so, that her condition is often extremely critical." . . . "The hemorrhage is so profuse that the tampon is frequently required to arrest it. The tumour is still as large as it was said by Dr. Trenholme to have been before the operation."

With a risk of death, and an uncertainty of decided benefit, oöphorectomy for the cure of fibroid tumours of the uterus cannot be very strongly recommended to a patient suffering from the disease. It will not do to raise the hopes of the woman too highly; she should be told candidly that the operation offers only a hope of success, as a failure to cure will only tend to injure the reputation of the operator. R. P. H.

ART. XIX.—*A Manual of Histology*, edited and prepared by THOMAS E. SATTERTHWAITE, M.D., of New York, President of the New York Pathological Society, Pathologist to the St. Luke's and Presbyterian Hospitals, etc. In association with Drs. THOMAS DWIGHT, J. COLLINS WARREN, WILLIAM F. WHITNEY, CLARENCE J. BLAKE, and C. H. WILLIAMS, of Boston; Dr. J. H. C. SIMES, of Philadelphia; Dr. B. F. WESTBROOK, of Brooklyn; and Drs. E. C. WENDT, A. MAYER, R. W. AMIDON, A. R. ROBINSON, W. R. BIRDSALL, D. BRYSON DELAVAN, C. L. DANA, and W. H. PORTER, of New York City. 8vo. pp. 478. New York: William Wood & Co., 1881.

IN no department of scientific medicine have the past few years been marked by more progressive strides, and more general development of keen interest than in histology—normal and pathological. While, but a short time since, students in our medical schools knew little or nothing of this important study in a practical sense, now, the almost universal system of laboratory instruction adopted affords opportunities, which are eagerly embraced and fully appreciated, as evinced in the interest shown, and in the steadily increasing number of original investigators, whose contributors mark the beginning of a new era for American scientific literature. To those interested in histology, and especially to those engaged in teaching it, there has been long apparent the need of some text-book, which could be placed in the hands of students with more satisfaction than any of those ordinarily in use. In such an ideal text-book, we should find concise and accurate descriptions of tissues and organs, illustrated by faithful drawings, and accompanied with explicit directions of the best modes of obtaining, preparing, and examining the structures—a book at once full enough to guarantee adequate information to the novice without being tedious to the advanced student, and, at the same time, containing sufficiently complete descriptions, with succinct accounts of the most recent investigations, to claim the careful perusal of the experienced histologist, without presenting that diffuseness so confusing and disheartening to the beginner.

The task of the production of a volume supplying this long-felt need, our author and his associates have taken upon themselves. That the satisfactory completion of such a work is beset with difficulty, we think all must admit; we feel, therefore, that our authors are to be congratulated on the degree of success which their united efforts have achieved. Dr. Satterthwaite, as stated in the preface, has wisely availed himself of the coöperation of a number of gentlemen, many of whom have given special study to the investigation of the organs, a description of whose histology they contribute

The first nine chapters, discussing apparatus, general instruction, methods, and the simple tissues and structural elements, are contributed by Dr. Satterthwaite. Chapter I., treating of apparatus, methods of work, lenses and general considerations, is marred by several inaccuracies: the method of determining the magnifying power of a lens, by placing a rule alongside of the stage-micrometer, and thus comparing the scales, yields but approximate results, strict accuracy being hardly obtainable, especially with high powers, where the slightest discrepancy represents, perhaps, a difference of a hundred or more diameters, in some cases a matter of no little moment; the better method of projecting the lines of the stage-micrometer by the camera, afterwards applying the rule, is to be preferred. The length of the standard tube when in use is assumed by English and American opticians as ten inches, or twenty-five centimetres; "twenty-five centimetres, or about *eight* inches," as stated, being misleading as well as incorrect. In the enumeration of the desirable qualities of objectives, the third quality, "all objects in the field should appear with equal distinctness, whether at periphery or centre," is already included in the first—"it should have no spherical aberration." In the next few lines we are told "the former (penetration) depends upon a *large* angle of aperture," a statement in direct opposition to the views generally accepted. As a test of high lenses, a valve of Pleurosigma Angulatum is recommended, the exhibition of the three seats of markings, by direct light, being considered a good test for 500 diameters; in our own experience, for the definition of lenses designed for histological work, there are no tests more admirable than the salivary corpuscle, together with scales of genuine English podura. When we find, in the next paragraph, Nobert's test-plates recommended to test the *magnifying* power of lenses even more carefully, we presume that by typographical error, "magnifying" has been substituted for the proper word "resolving." On concluding this chapter, it is to be regretted, that we find no mention of, or description of the method of using, that very useful accessory, the camera lucida. This we cannot fail to consider an unfortunate omission, as, in a book designed especially for students, full instruction as to the best manner of producing accurate drawings of microscopic objects is eminently desirable; we would have been glad to find a page devoted to a full explanation of the mode of using the camera, with an earnest recommendation to draw all interesting objects whenever practicable.

The second chapter is devoted to the various methods of preparing tissues for examination, including hardening, section-cutting, staining, and injecting; the section on stainings is especially complete, giving the formulæ for making, and directions for using, all the most important stainings employed. It would have been desirable to have the effect of variations of the strength of the fixing or bleaching acid solutions considered more at length, as all gradations of the stainings with the borax-carmine solution may be thus produced. The section following furnishes some excellent formulæ for injecting fluids, and contains valuable hints upon the process in general.

In the succeeding chapters, with which the descriptions of the tissues begin, we have presented a very satisfactory account of the blood; the behaviour of the cells when treated with the various reagents, as solutions, gases, heat, and electricity, and the mode of viewing the circulation being given, to which are added detailed accounts of the methods of counting the corpuscles, and of using the *hæmochromometer* of Malassez and Verick, by means of which "the richness of the blood in hæmoglobin, and the maximum amount of oxygen which it can absorb, may be determined." While giving the reaction of blood with the indifferent salt solution, the peculiar shrinking or crenation of the corpuscles in stronger saline solutions, as concentrated urine, has been omitted, the knowledge of which point is sometimes of practical import. The epithelia are next considered, descriptions being given of the three principal varieties,—squamous, ciliated, and columnar, to which is added a synopsis of the later views concerning the intimate structure of these cells. In the account of the squamous cells from the mouth the salivary corpuscles are casually mentioned, and we read, "in size they closely resemble the white corpuscles of the blood, but, as a rule, exhibit no amœboid motion; the white globules, on the other hand, rarely have any Brownian movement." That the so-called "salivary" corpuscles are morphologically, at least, identical with leucocytes, which have imbibed fluid of less density than the liquor sanguinis, we think there can be little doubt. Dr. J. G. Richardson, some years since, first called attention to the fact that by treating the salivary cells with saline solutions, they gradually lost their "salivary" characteristics, and finally assumed the appearance of normal white blood corpuscles, even to the marked amœboid movements; on the other hand, by irrigating a slide of blood with filtered saliva containing no cells, we may observe the leucocytes to cease their amœboid motion, gradually become spherical, increase in size, present one or more nuclei, and finally take on the Brownian movement, in short, present themselves as veritable "salivary" corpuscles. Whether these latter are solely transuded leucocytes, whose migration has been aided by some local congestion of capillaries supplying glandular tissues, depending perhaps on some special nervous stimulus, or whether they are derived from the submucous tissue, or from proliferation of the cellular elements of the glands, seems to be still undetermined, but that morphologically, at least, they are identical with the leucocytes or lymphoid cells, seems to admit of but little doubt.

The next four chapters are devoted to the consideration of the "connective substance group," embracing excellent descriptions of the various varieties consisting of mucous or gelatinous tissue, adenoid, neuroglia, fat tissue, fibrous tissue proper, corneal tissue, intermuscular tissue, tendon, elastic tissue, bone, cartilage, enamel, and dentine. As our author truly states, "just at the present time the histology of connective substances has an important bearing on many points that relate to inflammation, degeneration, and the development of certain new growths, and it is, therefore, desirable to have a clear conception of them;" it is more than probable that, with the advance in our knowledge of pathological processes, this class of tissues will assume a position of increasing importance, and it is, therefore, gratifying to find the student provided with so clear and full an account of these structures as here found. In discussing the mode of development of fibrous from embryonic tissues, our author expresses himself as tending to the conviction that the fibrous tissue arises from the soft, gelatinous—homogeneous—material, formed by the embryonic cells themselves and in intimate proximity with them, "by a process of fibrillation inaugurated by the presence and under the formative action of the connective-tissue corpuscle," citing the result of pencilling macerated specimens, by which the corpuscles themselves may be partially or entirely removed, while the areas showing the fibrillation still remain, and are without nuclei. While the observations already recorded by several observers make the development of fibrous tissue by this (the "indirect") mode highly probable, yet, as stated by Klein, that the mode of the direct transformation of the connective-tissue cells into the fibres participates also largely into the development of this form of connective substance, seems certain. In his description of the adenoid form of this group, our author takes exception to the views of "Klein and other histologists" as to the reticulum being formed by the anastomosing processes of stellate cells, holding, on the contrary, "that adenoid tissue does not generally consist of a network of branching corpuscles, as has been claimed, but rather of a network of fibrous cords on which the corpuscles are superimposed;" regarding the views of Klein as stated in his "Atlas of Histology" (p. 155–6) there appears to be no issue, since they accord in the main with the description just quoted. In concluding Chapter V., attention is called to the fact that in the light of more modern investigation and study, we can no longer consider the endothelial coverings of serous surfaces as modified epithelium, but that now we must turn to the connective substances to find their true interpretation—modified connective-tissue cells. The three following chapters treat of the various forms of cartilage, bone, and teeth, containing carefully prepared accounts of the mode of development and growth of the last two.

Succeeding these, the general histology of the nervous system is presented, embracing descriptions of the three classes into which nerves are divided—myelinic or medullated, fibres of Remak, and ultimate fibres; together with the most satisfactory methods of preparation and examination, an account of the various ganglionic centres, and, finally, an enumeration of the modes of termination, under which we find—by undivided or free endings; by end bulbs; by terminal loops; in corpuscles; by networks; and, finally, in special apparatus; our author states that, on two occasions, he has seen the nerve fibre pass through the Pacinian body, resuming its medulla on its exit, which it had lost on entering the corpuscle.

Chapter X., devoted to muscular tissue, is contributed by Dr. Dwight. The section discussing the striated variety is especially interesting, as expressing the author's convictions regarding the true structure of this tissue. After describing the appearances of striated muscle, as ordinarily seen, the writer presents an interpretation of these as found in the study of the striped muscle of the water-beetles, his conclusions being especially based upon observations on the living muscle of the detached legs of the Gyrinus (an aquatic beetle commonly known, according to our author, as the "lucky-bug"), and agreeing, in the main, with those of Schäfer. According to these conclusions, the structure of striated muscle is briefly as follows: there is a transparent, semifluid, ground substance, which is the contractile element; there being placed transversely, at certain intervals, a double row of minute granules or spherules, the refraction of the light from which causes on either side of them the appearance of a bright band, in the middle of which, on account of a smaller number of rays passing through, we have the appearance of a dark line—corresponding to the "membranes" or septa of Krause, as usually accepted. In addition, our author doubts the existence during life of the longitudinal striation or fibrillation, regarding these appearances as the results of reagents or post-mortem changes.

In the following chapter, Dr. Wendt has furnished us with an admirable description of the vascular system, including the mode of development of the capillaries, to which is appended mention of those peculiar structures, the coccygeal and intercarotid glands. After carefully pointing out the characteristics of the vascular endothelium, attention is directed to the small areas, usually without nuclei, which are found between the other endothelial plates, known as the "intercalated areas" of Auerbach. In opposition to the view that these are strangulated cells, our author considers that "it is more logical to regard them as the remnants of an incomplete endothelial desquamation, a process which is of physiological occurrence throughout the bloodvessels." While he, thus, does not admit the existence of stomata, as described by Cohnheim, he finds the explanation of the well-known phenomena of migration in the permeable, protoplasmic nature of the endothelial tubes; the suggestion is also offered, that the remains of these desquamated cells, appearing in the blood, have supplied the material for the "*microcytes*," "*hæmatoblasts*," etc., of various authors. In accord with the views already stated, the small so-called "granulation" bodies found beneath the endothelium of vessels, are considered "as matrix cells for the regeneration of desquamated endothelium," this conclusion being deduced from the observation that similar bodies appear in large numbers in the vessels of young animals, and very closely resemble germinating endothelium; while they shrink up with increasing age of the animal, the permanency of some of them, at least, is rendered highly probable by their sudden reappearance in certain pathological processes. The assertion of Beale, as to the constant presence of ganglionic cells in the vascular nerves, our author does not accept, since, in his experience, their presence is exceptional.

Dr. Birdsall has contributed a carefully prepared chapter concerning the lymphatic system, in the introductory remarks to which he writes, "it is still in this direction that we are to look for advancement in pathological histology, for there can be no doubt that heretofore too little attention has been given to the lymphatic system, both in its histological details and in its topographical anatomy." Following the consideration of the present views regarding the structure of this system, as well as its relations to the connective tissues, we find a general description of the lymphatics, succeeded by more detailed accounts of those of special localities, together with valuable hints as to the most successful methods of obtaining satisfactory specimens for study. The intimate structure of these vessels is considered, and the views of Ranvier, as well as those of Klein, concerning the real nature of the *true* and *false* stomata, are presented, the chapter concluding with an account of the lymphatic glands, with directions for obtaining their satisfactory injection.

The liver and its appendages, and the kidney supply the text for the next two chapters, being written by Dr. Mayer. The histology of these organs is given in a satisfactory manner, according, in the main, with the views generally accepted. In order to demonstrate the biliary capillaries, the method of natural injection by a saturated solution of sulph-indigotate of sodium is strongly recommended, full details of the process being added. To the question, "Do the bile-capillaries possess walls of their own?" an affirmative answer is given, this conclusion being deduced from the examination of organs prepared by the above method of natural injection, in which these capillaries are said to appear, when seen in transverse section, as minute dots, between the hepatic cells, surrounded by a delicate circle, representing the homogeneous wall. In the chapter devoted to the kidney —one of the best in the volume—it is gratifying to find a confirmation of the observations of Heidenhain, as to the existence of the striation or "rods" of the epithelium of the tubules; it is to be remarked, however, that these, as figured by Heidenhain, appear more delicate and closely set, than as represented in the present chapter. To bring these structures clearly into view, our author directs the cortex of the kidney of a dog or rabbit, after being cut into small fragments, to be immersed in a five per cent. solution of neutral chromate of ammonium, for twenty-four hours or longer. Natural injections by the method (Heidenhain's) already mentioned are advised, as by this means the presence of the "rod" epithelium is also beautifully shown, together with the fact that by these cells alone is the indigo salt excreted.

Chapters XV. and XVI., contributed by Dr. Simes, furnish a concise and excellent account of the histology of the generative organs, both male and female. In treating of the development of the spermatozoa, the author has availed himself of the admirable description given by Klein, which is quoted in full; we regret that no mention is made of the interesting observations of Gibbs concerning the structure of these elements.

The minute anatomy of the respiratory tract is from the pen of Dr. Westbrook, and includes a full description of the organs usually comprised under this heading; in describing the alveolar epithelium, as seen in silver stainings, the darkly coloured, so-called pseudostomata are explained by the hypothesis of Klein—that they are the deeply-stained processes of branched connective-tissue cells, lining the lymphatics, which protrude between the epithelial cells.

Chapter XVIII. treats of the skin and its appendages, and is written by Dr. Robinson. In opposition to the generally admitted view, this observer believes the "prickle" cells of the rete Malpighii to be connected by filaments, which are represented by the *light* bands seen between the cells. The dark lines, which are usually interpreted as being the delicate connecting processes, are considered as *spaces* between the true connecting fibres, these being filled with an albumenoid substance, and forming a system of minute channels for the nutrition of the epidermal cells. We also find mention of the "fat-columns" of Warren—a special account of which is found, however, in a later chapter. The opinion is expressed, when describing the "tactile" corpuscles, that in these the nerve does not terminate, but passes on into the rete Malpighii.

Dr. Amidon, in Chapter XIX., supplies a concise description of the central nervous system, including spinal cord, medulla, olivary body, cerebellum, and the most important centres of the cerebrum. A means of determining which surface of transverse sections of the cord we may be examining is suggested, depending upon the fact that the fibres forming the anterior roots pursue an obliquely descending course through the anterior columns; thus, in transverse sections with the upper surface towards the observer, the central ends of these fibres are nearer the eye than the peripheral ones, which are slightly beyond the focus, in order to clearly see which, a change in focal adjustment must be made, giving an apparent peripheral motion to the bundle of fibres.

In the chapter devoted to the organ of vision, Dr. Williams gives a clear but concise account of the structure of the various tissues going to form this complex organ. While describing the cornea, he expresses himself as doubting the integrity of the anterior and posterior elastic membranes, as distinct and separate structures, considering them as merely condensations of the substantia propria; as a means of demonstrating the arrangement of the various bundles of fibrillæ, the method by interstitial injection of a solution of argentic nitrate, we consider preferable to that by inoculation as given, as by the former a most striking picture can be readily obtained, showing, at the same time, the relation of the corneal spaces to the ground substance. An account of the system of lymphatics of the eye, with mention of the intimate relation existing between the anastomosing spaces and the perivascular and perineural channels, as found in the cornea, would have been desirable, since, it is more than probable, an extended knowledge of the pathological processes occurring in this organ will establish the fact of a greater participation by this system than is generally admitted.

According to custom, the auditory apparatus follows, the authorship of which belongs to Drs. Whitney and Blake. Pursuing the natural order, we find descriptions of the external, middle, and internal ear. For the study of the membranous labyrinth, the organs of certain fish—pike, perch, or cod—are recommended, and practical instructions for successful examination added, with a description of the structure as there found; this is followed by a consideration of the cochlea, including the organ of Corti.

Two chapters are devoted to the nasal fossæ, pharynx, tonsils, mouth, and tongue, by Dr. Delavan, embracing the olfactory region and special organs of taste. With the descriptions of these tissues, we naturally anticipate an account of the salivary glands, but in this we are disappointed; for, while the mucous and serous glands of the oral cavity are noted, those of much greater importance are ignored, and, in fact, careful search throughout the entire volume reveals the rather remarkable fact that all mention of these highly interesting structures has been omitted.

The alimentary canal forms the second contribution of Dr. Wendt to this volume. Under this heading we find œsophagus, stomach, small and large intestine, and rectum, the descriptions according with the views generally accepted at the present time; attention, however, is called to the still unsettled state of our knowledge concerning the true nature of the "parietal" cells of the peptic glands, and their relation to the chief cells. The recent conclusions of Edinger are presented, by whom these parietal cells are considered to be direct developments from the chief cells, and, in addition, the still later views of Stöhr, who maintains that they are those portions of the mucoid cells, made up of unaltered protoplasm, which have not undergone mucoid degeneration.

In a rather heterogeneous group—unless our ignorance as to their true nature be taken as the family tie—the consideration of the spleen, pancreas, thymus, thyroid, and pineal glands, and pituitary body forms the contents of Chapter XXV., by Dr. Dana. We here have presented an excellent description of the splenic structure, with hints as to the best methods of preparation, followed by concise accounts of the remaining organs.

The title of the succeeding chapter—"The Thick Cutis Vera"—presents, we believe, a novelty, as regards its description as a distinct organ. According to the author—Dr. Warren—this structure resembles closely a tendinous expansion, being composed of a network of bundles of fibrous tissue, among and covering which are flat connective-tissue cells. This structure reaches its highest development on the posterior aspect of the body, on the back and shoulders, attaining a thickness of over 5 mm. We next find an account of a series of structures whose existence was first pointed out by our author, to which he has applied the name of "fat-columns," or "fat canals;" these consist of nearly vertical clefts or slender columnar spaces extending through the deeper and middle layers of the cutis from the layer of adipose tissue found beneath the latter, and terminating at the bases of the follicles of the lanugo or downy hairs; their spaces are filled with adipose tissue, thus suggesting the name already mentioned. The number of these "fat-columns" corresponds to the number of the follicles of the hair, the latter being seemingly necessary for their appearance; the lymphatics of the cutis were found to correspond to the situation of these clefts; for a detailed description of these structures, together with their relations to the well-known elements of the skin, we must refer the reader to this very interesting chapter, where, in addition, will be found some suggestions regarding their relations to pathological phenomena.

The urinary excretory passages and the supra-renal bodies form the subjects of Chapter XXVII., by Dr. Wendt, who, in conjunction with Dr. Porter, also contributes the concluding article of the volume, on the mammary gland. In this very instructive contribution, we find the peculiar views of Creighton and others, regarding the mode of the secretion of milk, considered at some length, but space forbids us more than mentioning the conclusions of our authors concerning this interesting point. These are, that the evidences of a destruction of the epithelium are not convincing, while direct observation tends to demonstrate that fat drops may be extruded by the force of the vital contractions of the protoplasm of the cells, in addition to which, the partial rupture of the cell-walls liberates an additional portion of the oil droplets, but, in neither case, is there any impairment to the vitality of the cells, and, that by these continuous processes of discharge of the fatty particles are the phenomena of lactation maintained.

During the perusal of this volume, it has been with no little interest that we have noted the comments of the various contributors regarding the intracellular networks of such constant occurrence as described by Klein, Flemming, Schleicher, Heitzmann, and others; while usually these observations have been mentioned, none of our authors, we believe, have confessed allegiance to these views. That appearances suggesting such structure continually are seen, all must admit; the fact, however, that special processes are necessary for their satisfactory demonstration, renders the suspicion that they are artificial productions by, perhaps, the coagulation of the albumenoid cell contents still more forcible, the coagulation of albumen frequently resulting in the most remarkable arrangement of apparent fibres into networks and striations. According to Klein, the molecular motion visible in leucocytes, on their imbibition of water, corresponds to a breaking up of the intracellular network, which would necessarily imply beginning disintegration; but, under proper treatment, as has been demonstrated in the "salivary corpuscles," these cells leave off the Brownian movement, and once more assume their amœboid—vital—changes.

In the matter of illustration—so important in a text-book of this kind—there is room for improvement; while some of the sections are fairly illustrated, in others the representations are meagre, the deficiency being especially apparent in those portions devoted to nervous tissues and their endings; an illustration of the spinal cord, in transverse section, under medium amplification, would improve the corresponding description; another defect concerning the illustrations is the very general omission of the amplification under which the drawings were taken; this matter, of such common neglect in books, is one which, whenever possible, should receive careful attention. That in a volume emanating from American sources, the old familiar and oft well-worn illustrations should be replaced by original ones taken from actual preparations, as far as possible, is eminently desirable, but the impracticability of such an undertaking, under existing circumstances, is appreciated; we are compelled, therefore, to be content to await the solution of the problem of the productions of illustrations, at once satisfactory and inexpensive.

The arrangement of the contents would be much improved, both as regards convenience and system, were the chapters grouped according to the relations between the organs; thus, the description of the "Thick Cutis Vera" should be found succeeding that of the skin, and not separated from it by a gap of seven chapters. Again, the urinary excretory passages find their natural positions as following the kidney; it is usual, we believe, to associate the mammary gland with the female generative organs.

In conclusion, the authors are to be congratulated on the production of so satisfactory a manual—a book, although in some respects admitting of improvement, which, we doubt not, will find a ready welcome from all workers in this department, as being a trustworthy and valuable epitome of the subject, according to the light of the most recent investigations, and as being by far the best English text-book, as adapted to the wants of the student and busy practitioner; as such, we can heartily recommend it.

G. A. P.

ART. XX.—*Columnæ Adiposæ. A Newly-described Structure of the Cutis Vera, with its Pathological Significance in Carbuncle and other Affections.* By J. COLLINS WARREN, M.D., Instructor in Surgery, Harvard University; Surgeon to the Massachusetts General Hospital. 8vo. pp. 78. Cambridge: Riverside Press, 1881.

THIS little monograph of seventy-eight pages contains a large amount of original work, both in histological and pathological directions, and calls attention for the first time to certain formations in the skin that are found in the healthy human organism and have special interest for anatomists and surgeons. It seems strange that after all the elaborate and minute studies on such a comparatively simple tissue as the skin, dermatologists should have so neglected the cutis vera of the back, which appears to differ in many respects from the cutis in other situations. And this is the more singular, as Dr. Warren has shown conclusively, that the appearances he describes are often plainly visible to the naked eye. This cutis vera, he tells us, is often like a veritable hide and much thicker than in many pachydermatous animals. It is, indeed, a sort of aponeurosis sending downwards a series of long and branching fibrous prolongations. These pierce the subcutaneous fat and combine to form a compact, intricate network. This peculiar web of interlacing bands is often observed to pin down fatty tumours in the dorsal region and check the surgeon if he attempts to "shell them out." This portion of the skin is also devoid of the usual papillary elevations, while the delicate lanugo hairs are seen proceeding from little pits sparsely scattered over the surface. The corresponding follicles also have little depth, not extending through the several layers, while each one is met from beneath by the *fat canal* or *column*, whose axis is directed somewhat obliquely to that of the follicle.

These fat columns, fat canals, or spaces (*columnæ adiposæ*), are clefts or cylindrical spaces in the skin, each about four millimetres long, and containing, except in quite lean people, a large amount of adipose tissue ensheathing bloodvessels, lymphatics and the secretory and excretory portions of the sweat gland. At about the middle of the canal, lateral passages proceed, bearing some resemblance to the extended arms of an old and gnarled trunk. When the fat tissue is absent its place is taken by connective tissue, in conjunction with the structures already mentioned. Canals of similar character, though much less marked, exist upon the shoulders, arms, breast, abdomen, and lower extremities. They are also found in fœtal and infantile life, and can be detected in some of the lower animals, as the dog and pig.

Their special physiological function is not thought to be very plain, though the author observes, that they may greatly facilitate the motion of the hair shaft with which they are in such close connection. Since, according to Biesiadecki, each lanugo hair lies flat, while at rest, as soon as the erector pili muscle contracts, erection would be hindered by the resisting nature of the dense and inelastic skin were not, as is the case, each follicle provided with an elastic cushion, into which it may retire while the shaft is being erected.

Having in view these anatomical considerations, Dr. Warren has found that they also throw light upon some pathological conditions that have been obscure. The common dorsal carbuncle is one of these, for its cribriform surface and honey-combed interior have long been a target for many unsatisfactory speculations. The following successive changes are those that Dr. Warren has observed. At first, large collections of connective-tissue corpuscles are found stored in the subcutaneous connective-tissue; then, in the central portions these bodies are seen to have made their way into the fat canals; still later the lateral branches have become filled, until at length the whole cutis vera is infiltrated by networks of corpuscles, the superficial layers only remaining intact. As, little by little, the collections in the columns become larger and more spherical and liquid, the hair follicles and muscles become absorbed, until finally the hair-shaft is pushed outwards by the rise of the pustule. This description is a mere sketch of the changes, which, to be properly appreciated, should be read in the concise language of the author.

Altogether, this little monograph is a model in its way, showing how well-directed histological studies, prosecuted under sound and thorough methods, can even now discover new facts of physiological and pathological value that could never have been appreciated without the intervention of the microscope. T. E. S.

ART. XXI.—*Lectures on the Diagnosis and Treatment of Diseases of Chest, Throat, and Nasal Cavities.* By E. FLETCHER INGALS, A.M., M.D., Lecturer on Diseases of the Chest and Physical Diagnosis, and on Laryngology in the Post-Graduate Course Rush Medical College. 8vo. pp. viii., 437. New York: William Wood & Co., 1881.

THE contents of this volume comprise the course of lectures delivered by the author in Rush Medical College, Chicago; together with some brief outlinings of the character, symptoms, diagnosis, and treatment of the various morbid processes to which the lungs and pleura, heart and aorta, larynx and trachea, and the pharynx and nasal passages are liable. While properly disclaiming originality of matter in his text, save for a few records of personal observation, the author claims the exercise of considerable discrimination in presenting the relative importance of the signs of the affections discussed.

The language employed by Dr. Ingals is clear and perspicuous, though marred here and there by reiterations, which, however essential in the lecture-room, are hardly appropriate for retention in the published volume.

The diagrams illustrating percussion and auscultation are good and clear. Although a number of instruments are figured which are rarely seen elsewhere than on the lecture-table, there is not a great excess of this sort of material. The illustrations of normal and diseased structure, original and selected, are commendable throughout. An appendix of formulæ and dose-lists completes the text, which is followed by a copious and satisfactory index.

In the delivery of courses of lectures, too much or too little prominence is, in any institution, liable to be given to subjects which receive more equable consideration in systematic treatises; this depending greatly upon the immediate requirements of the class for which the lectures are prepared. Hence it would be hypercritical to allude more definitely to a great disparity of attention displayed in the discussion of quite a number of subjects, as, for example, phthisis, hypertrophy of the heart, and laryngoscopy.

Save in a very few topics, the medical student will not be led very far into details in studying this conspectus, for such it really is, but at the same time, and which is much to the point, he will not be led astray.

In bringing within one pair of book covers a concise epitome of affections of the chest, and the entire respiratory tract, Dr. Ingals has recognized the interdependent relations of a group of anatomical regions falling together naturally both in histology and in pathology. His volume aims thereby at an objective completeness which has not hitherto been attained, to our knowledge, in any single work on physical diagnosis, or on diseases of the chest and air-passages.

In this respect it is to be commended to the advanced medical student, undergraduate or postgraduate, as may be, as a desirable guide towards a comprehensive view of a special and definite line of study; the precursor, perhaps, of a legitimate special practice equally definite in the scope of its ramifications. J. S. C.

Art. XXII.—*On the Construction, Organization, and General Arrangements of Hospitals for the Insane, with some Remarks on Insanity and its Treatment.* By Thomas S. Kirkbride, M.D., LL.D., Physician-in-Chief, and Superintendent of the Pennsylvania Hospital for the Insane, at Philadelphia, late President of the Association of Medical Superintendents of American Institutions for the Insane, Honorary member of the British Medico-Psychological Association, etc. Second edition. 8vo. pp. 320, with revisions, additions, and new illustrations. Philadelphia: J. B. Lippincott & Co., 1880.

This volume brings before us the very latest results of the studies of a gentleman who, for more than forty years, has given special attention and earnest study to the subject of hospital construction in all its different phases, and, with a fondness for architecture and a special aptitude for all matters connected with the construction of institutions of the character described in the book, he has combined a caution and ripeness of judgment which will commend his observations to all men who are earnestly seeking to know the very latest and best plans for hospitals for the insane, and for their proper organization and management. When the first edition appeared, twenty-six years since, a distinguished alienist, in a review in this

Journal, characterized it "as the best and most nearly perfect work of the kind ever produced," and this edition is an improvement on that, in the more elaborate plans, and in the fact that the author has had ample opportunity to verify his conclusions, and to add whatever may, since that time, have appeared to add force and conviction to his conclusions; and that these conclusions are highly valued and of the greatest interest and importance, may be evidenced by the fact that hospitals, in accordance with these plans, have been erected in all sections of the country, from the extreme northwest to the southeast, and they have been found most admirably to answer the purpose of their erection, and any departure from these plans has been found to be attended with trouble in proportion to the extent of the departure.

To any one, therefore, anxious to inform himself on the construction and organization of hospitals for the insane, no book in the language will give so much valuable information of a character which can be thoroughly relied upon as correct and not likely to lead into any errors. In these days, when certain classes of men give currency to the notion that experience is not to be taken into account when the plans and construction of a hospital for the insane are under consideration, such a work seems eminently needed to correct just such ridiculous assertions, to show just what is required, and exactly in what manner that requisition may be carried into effect with the greatest certainty of success, and in the most economical manner.

While it might be regretted by some that the author could not have given his views more in detail on many of the subjects treated in the opening chapters of the volume, for which he is so eminently qualified by the clearness and breadth of his views on those matters, they cannot fail to see, in what he has said, the convictions of a long and varied experience expressed in that lucid style so characteristic of all the author's productions. So much has been said recently on "home treatment" of the insane, that we feel constrained to quote in full the author's remarks on that subject.

> "The general experience seems to show that a very large proportion of all the insane are treated more effectually, and far more economically among strangers, and in well-managed institutions specially provided for their treatment, than in their own homes and surrounded by their families and by familiar scenes and associations.
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> "Much as has been said in commendation of 'home treatment,' and 'family treatment,' it is not to be forgotten that these are commonly tried and fail, before the idea of removing a patient to an institution is seriously discussed. The great danger in unduly protracting these efforts at home, is that the best period for successful hospital treatment is lost, and that what was recent in its character, becomes chronic, with all the diminished chances of recovery connected with this latter condition.
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> "The history of 'home' treatment before the establishment of hospitals is one of the saddest records of inhumanity and cruelty to be found anywhere. It was the discovery of this state of things, and the plain unvarnished recital of what was found by benevolent women and men, that led to the establishment of most of the State and government hospitals for the insane, which now do so much honor to the country, and give such blessings to the afflicted and their families.
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> "Very often this simple change from home to an institution, seems to be of itself sufficient to secure the beginning of convalescence, and not unfrequently the improvement in behaviour and conversation is, from the first, most remarkable.
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> "As the insane generally cannot be treated successfully, nor properly cared for in private houses, very clearly they cannot be in ordinary hospitals, almshouses, nor in penal institutions. The only mode then, of taking proper care of

this class in a community, it is obvious, as all enlightened experience shows, is to provide in every State just as many special hospitals as may be necessary to give prompt and proper accommodations for *all* its insane, to cure those that are curable, to give every reasonable comfort to those that are not curable, and to prevent their becoming worse—and what is of very great importance, hardly to be overestimated—to protect their families and the community from the acts and influences of irresponsible and often dangerous persons.

"The dangers incident to insane persons being at large are much greater than is commonly supposed. Not a week, scarcely a day, indeed, passes without the public press containing the details of some occurrence, resulting in loss of life or serious injuries to individuals, or destruction of property from the neglect of proper care and supervision on the part of their friends or the public authorities, of those who had become insane and irresponsible for their actions. Very many of the cases of suicide that are reported very clearly belong to this class, and of these a large proportion, there is good reason to believe, were curable if their cases had been understood and properly treated. It is worthy of note, too, that many of these acts, even those of peculiar atrocity, are often committed by individuals who, with all their obvious mental infirmity, had previously been regarded as perfectly harmless. This fact shows the importance of proper provision being made for the prompt care and treatment of all classes of the insane, as well as the danger of allowing persons bereft of their reason and not accountable for their doings, a freedom, which only subjects them and others to risks that benefit nobody."

There is another point from which this subject may be viewed which does not seem to us to have received that attention which its importance demands, the injury to the mental and moral character of the children in any family, by the constant sight and hearing of the conduct and language of an insane person, particularly should that person be one whom they have been accustomed to obey or look up to for advice or counsel. It is a matter of the most common observation that the moral sense and character of an insane person is that which first fails in mental disorders, so that the language and conduct are the exact reverse of that of the individual in proper health.

The imitative character of children here finds, unfortunately, ample exercise, and no one needs be told that they will take advantage of the opportunity. If, as has been stated on good authority, the mental condition of the population of the commune of Gheel, in Belgium, is greatly inferior to that of the surrounding communes, it is clearly to be attributed to the constant association for more than two hundred years with the different classes of the insane, and the impressions produced by that constant association. All observation teaches that the downward tendency is much more readily yielded to than the effort is made to rise, and this can be verified very frequently in every community.

The limits assigned will not allow a discussion of this and several other equally interesting questions, which the opening chapters of the volume bring before us. The chapters on the proper provision for the insane and the mode of securing hospitals with the appointment of the building commissioners are all eminently just and practical.

A recital of the mistakes which have been made in the selection of the sites for different hospitals would be extremely amusing did not the consequences in the way of infinite trouble and expense to all concerned in the after management make it too serious. It seems incredible that men remarkable for their shrewdness and management in other matters should have committed such egregious blunders as have been committed in the selection of the sites of many hospitals, and such can only be accounted for from the fact that they did not give that careful attention to the requirements of the location of a hospital for the insane which its great importance demands. Tens of thousands of dollars might have been saved in the construction, and in the subsequent management of the hospital, had a few plain facts, laid down in this volume, been carefully and thoroughly considered before the selection of the site was made.

We may mention only two, the supply of water and proper facilities of drainage, as ample justification of the charge. Many commissions seem to have entirely overlooked the fact that the supply of water for all purposes about such an institution should be practically unlimited, when they selected sites where the supply was limited to a few thousand gallons, and the expense subsequently incurred could be counted only in tens of thousands of dollars. As to drainage, there were matters which might offend delicate sensibilities, as they would certainly afterwards give great offence in the sickness, annoyances of various kinds, and great expense required to make proper disposal thereof.

The plans given in the book are of the most approved character, and have received the cordial sanction and unqualified approval of men of experience and character in all sections of the country, combining as they do so many points of excellence in general arrangement, ease of supervision, economy of management, and facilities for everything required to be done in such a building. It is freely admitted that some persons have thought these plans too elaborate, and that they require too great "an aggregation" of the patients, and we are treated to dissertations on the necessity of different plans where greater "segregation" can be effected.

We are free to acknowledge, after having read nearly, if not quite, all that has been so lavishly printed, that we fail to see one advantage to the inmates from such plans, and could name very many disadvantages. It is certainly a principle which every right-minded man will admit, that commissioners for the erection of hospitals or any other public buildings have no right to try experiments on matters of doubtful and disputed expediency with money which has been raised by taxation, and of which they are made, for the time, trustees, and we believe the principle extends also in its scope to applications made for money to be expended for such purposes.

No community will object to a careful and judicious expenditure of money in the erection of buildings designed for public use, particularly in hospitals for the insane, if they see that the funds are applied to the purpose for which they were designed, in an economical manner, and not to the advantage or pecuniary profit of any man or set of men.

"The size of the building, and the number of patients having been determined, its form and general arrangements will next require attention; and no plan, however beautiful its exterior may appear, nor how apparently ingenious its interior may seem, should ever be adopted without, as already suggested, having been first submitted to the inspection and having received the approval of one or more physicians who have had a large practical acquaintance with the insane, and who are thoroughly familiar with the details of their treatment, as well as with the advantages and defects of existing hospitals for their accommodation. So different from ordinary buildings or other public structures are hospitals for the insane, that it is hardly possible for an architect, however skilful, or a board of commissioners, however intelligent and well-disposed, unaided to furnish such an institution with all the conveniences and arrangements indispensable for the proper care and treatment of its patients. Nothing but a practical familiarity with what is required can do this. All recent experiments in planning hospitals without consulting experts, or asking their opinions before the adoption of the plan, as should be expected have proved failures. No desire to make a beautiful and picturesque exterior should ever be allowed to interfere with the internal arrangements, any more than the wish to have an elevated and commanding site should be permitted to compel the provision of costly roads, and the expense and annoyance of having everything in all future time carried to its great elevation; the interior should be first planned, and the exterior so managed as not to spoil it in any of its details."

All the chapters which treat of different points in the construction and arrangements of the various portions of the building, even to the minutest details, are worthy of, and deserve careful and more thorough consideration. Every one who has charge of a hospital for the insane will thank the author for the care he has taken to give such explicit directions in matters which, to an ordinary observer, would seem trivial and useless; but all such statements are in the interest of sound genuine economy (not that falsely so called), of ease of management, and of comfort and convenience to those who are to occupy the wards as long as the building stands.

"The difference in cost between a hospital that is well built and one that is badly constructed; between one that is complete in all its arrangements and one that is imperfect; between one liberally and one meanly managed, is really so small, that if the citizens of any State would make the simple calculation how much of this extra expense would fall upon each one of them, it can scarcely be credited that a single individual would anywhere be found willing to admit that he would not cheerfully bear his proportion of it, even if it had never occurred to him that at some period or other he might himself be compelled personally to test the character of the provision made by his State. Practically, the people on whom ultimately the cost of such institutions devolves, as far as I know, have never hesitated in contributing their share of what was necessary to effect the object thoroughly. They have only asked that what was done should be fully up to the knowledge of the times, and calculated to give the afflicted every possible benefit that could be derived from the expenditure, and that all waste and useless ornamentation should be avoided."

Particular attention is directed to the carefully written chapters on heating and ventilation, and to the maturely considered views therein expressed. To attempt to quote from them would require the transfer of whole chapters to these pages, and the subject, as therein treated, can only be properly understood and appreciated when read as an entirety and not in parts. It is astounding that men, calling themselves architects, should put aside the views expressed in this book, confirmed as they are by the experience and practical observation of gentlemen of character and standing in every section of the country, and substitute for them plans of their own, which have never been tested, and which depend for their success on details of arrangement and management difficult to maintain, and almost uniformly failures when practically tested.

The chapter on the cost of a hospital for the insane should be very carefully studied to correct some very erroneous notions which have been put forward by gentlemen whose lengthy dissertations are worth, in a practical point of view, less than the paper on which they are printed and the ink thus wasted.

What is really needed, as is fully shown in these chapters, is that a hospital should be economically built of the best material, put together in the most thorough and substantial manner, fireproof in all its arrangements, and so carefully apportioned as to give every required convenience, and the avoidance of the necessity of constant repair.

That such a hospital can be so built for a reasonable amount has been conclusively demonstrated, and the contrast between such an institution, constructed with every appliance which the art and experience of the day have provided, and in a manner to stand any test to which it may be put, and a hospital built on the cheap plan, with the implied necessity of the expenditure, each year of its existence, in repair of the interest on the cost of construction, is such as to prove, beyond cavil, to any fair-minded man that there is, in reality and in truth, only one way in which a hospital for the insane should be planned and constructed.

In the second part of the volume, which treats of the organization and general arrangements of hospitals for the insane, so many subjects of interest are discussed that, in the space allotted, it is impossible to give any full discussion of them, or even make all the extracts which would indicate the author's views on those subjects. A few, therefore, can only be taken, for every one who has given any attention to the subject will coincide with these remarks :—

> "Upon most of the prominent points connected with the subject there is believed to be nearly entire unanimity of sentiment among those who have charge of the hospitals for the insane in the United States; so that, in expressing my own opinions on many of them, I have little more to do than to record the convictions which have been forced upon a majority of those who have had opportunities of testing, practically, the actual requirements of this class of institutions."
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> "The trustees or managers will have the general supervision of the institution and of its affairs, and they should, at frequent stated intervals, either as a board, or by committees, make visits through every part of the hospital, and exercise so thorough an oversight of its expenditures and of its operations generally, as will tend to secure the confidence of the whole community, and especially of those whose friends are committed to its charge; and they should always give a genuine and liberal support to the chief executive officer, whose duties, at the best, are sufficiently irksome and laborious."
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> "The members of a board of trustees, performing their duties properly, are always able to exercise a most important influence on the prosperity of any institution, and on the welfare of its inmates; and they may also by injudicious measures, or a want of interest in its affairs, produce effects of an entirely different character. While giving the strictest attention to their own appropriate functions, they should most carefully refrain from any interference with what is delegated to others, and meddling with the direction of details for which others are responsible. Especially should they avoid any personal intercourse with subordinates, that might lead them to a course which would weaken the authority of the principal of the institution. It would, indeed, be a safe principle to adopt, that there should be no ties of a personal, pecuniary, or political character between a member of the board of trustees and those who are employed in any of the departments of an institution, which could at any time prevent an unbiased judgment in a case of difficulty. Under no circumstances should a trustee so far forget the proprieties of his station, as to resort to subordinates for information that should come from the superintendent, or to circulate unfavourable reports in regard to an institution, without having first informed this officer of their existence and tendency, and learning from him their truth or falsehood, as well as the reasons which may have induced acts which, although correct in themselves, might, without proper explanation, be readily so misunderstood as to do great injustice to innocent parties."
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> "It is scarcely necessary to say that it is quite inadmissible for trustees to have an interest, directly or indirectly, in any contract or in any purchase with which a hospital is concerned. Such a course may at least lead to suspicions, the existence of which, however groundless, is always to be deprecated, and may, under some circumstances, prevent a trustee from acting honourably and impartially."

The following extracts relative to the physician-in-chief are especially to be commended to the attention of all interested in the care of the insane in these days when certain crotchety persons are endeavouring to introduce plans of management, which were tried, found disastrous, and abandoned years since.

"The physician-in-chief should be the superintendent and executive officer of the establishment. Besides being a well-educated physician, and of irreproachable moral character, he should possess the mental, physical, and social qualities to fit him for the post. He should serve during good behaviour, reside on the premises, and his compensation should be so liberal as to enable him to devote his whole time and energies to the welfare of the hospital. He should nominate to the Board suitable persons to act as assistant-physician, steward, and matron. He should have entire control of the medical, moral, and dietetic treatment of the patients, the unrestricted power of appointment and discharge of all persons engaged in their care, and should exercise a general supervision and direction of every department of the institution."

"It would seem to need but little argument to show that a hospital for the insane should have but one official head in reality as well as in name, to whom every one employed about it must be strictly subordinate. It would be just as reasonable to suppose that a proper discipline, or that good order would prevail in a ship with two or more captains, or in an army with two generals-in-chief, or in a college or a school with several principals, as to expect to find them in a hospital of the kind referred to, where two or more individuals are acting independently of all others, or in which there are certain officers over whom the physician-in-chief has no control. If such an arrangement ever worked well anywhere it must have been owing to some very rare or exceptional mental organization in those acting under it, and not because the principle is not so radically wrong. Every such trial—and there have been many within my own observation—so far as I know, has been a complete failure in the past, and in my opinion it will be so in the future.

"The very peculiar character of a majority of the patients received into such institutions, the numerous body of assistants required in their care, the large number of persons employed in the various departments, the necessity for active and unceasing vigilance, joined with gentleness and firmness in all intercourse with the mentally afflicted, and for prompt decisions in cases of difficulty, render it indispensable—if we wish the best results—that a large amount of authority should be vested in the chief officer."

"It must always be borne in mind that every department of a hospital for the insane, its farm and garden, its pleasure grounds, and its means of occupation and amusement no less than its varied internal arrangements, its furniture, its table service, and the preparation and serving of the food, the mode in which its domestic concerns are carried on, its heating and ventilation—everything connected with it indeed—are parts of one great whole, and in order to secure harmony, economy, and successful results, every one of them must be under the same general control. It is not to be supposed that the chief physician of the institution should personally superintend all or a majority of these matters, or fritter away his time in a constant attention to their details or even that he should be proficient in every one of them; but he should be expected to be so constituted mentally and physically, as to be able and willing to make himself familiar with all of them so far at least as to know when everything is in good order and when all services are properly performed. He should especially have that kind of tact and judgment which will enable him to fulfil efficiently one of the most important functions of his office, that of selecting individuals for every department, fully qualified to discharge their appropriate duties, and who will be held by him to a strict accountability for their proper performance.

"It is a great error to suppose that there is any detail about the management of a hospital for the insane, beneath the dignity or unworthy the attention of its chief medical officer. Everything that has any relation to the patients—and everything has some direct or indirect connection with them—may have an influence not readily appreciated by a careless observer, and to preserve unity of purpose, nothing should be arranged or changed without consultation with the head of the establishment."

"No one will deny that the arrangement recommended—which is the only one that can be relied on to work satisfactorily—places much power in the hands of the chief physician, but it must be remembered too that on him the responsibility also mainly rests. A man to whom this amount of control cannot be safely intrusted certainly is not the proper person to be placed at the head of an institution containing 250 insane patients. Dividing this power between two, three, or more would only tend to produce discord, destroy all proper discipline, and prevent prompt and wise action."

"The simple possession of adequate authority by the chief executive officer of such an institution often obviates the necessity of its being exercised. It may be unseen and unfelt, and yet a knowledge of its existence will alone often prevent wrangling and difficulties in the household, and secure regularity, good order, economy, and an efficient discipline about the whole establishment."

"The long-continued and uninterrupted performance of the duties of a hospital superintendent among his patients is a tax upon the mental energies and ultimately upon the physical powers of an individual not easily appreciated by those who have not had some experience of the kind, and one of the best modes of counteracting these effects is for that officer to devote a portion of his time to the supervision of out-door affairs. By this means without leaving home, he will not only have the invaluable advantage of active exercise in the open air, but also a form of occupation for the mind that will more effectually than any other divert it from the train of thought induced by a protracted visit through the wards. Change of occupation—both mental and physical—is the relaxation of a superintendent of a hospital for the insane, and is indispensable if he expects for any long period to preserve his health and usefulness. So many noble men in our own country have already broken down while engaged in the zealous performance of these duties, that hardly a better contribution could be made to the cause, or one that would more subserve the interests of the afflicted than that which would aid in preserving the mental and physical health of the right kind of hospital physicians, and in securing a proper supply of them."

One more extract must be given to indicate the views of the author on a question of great practical importance, the separation of the sexes.

"In every hospital the arrangements should be such that there will be little intercourse between male and female patients or the male and female attendants employed in their care. No particular disadvantage will result from their attending religious services or lectures in the same room, but on other occasions it will be best that they should be kept entirely separate. The advantages of frequent social parties, in which the two sexes meet on familiar terms, are very problematical, and balls for the males and females together, have in my experience appeared to be decidedly objectionable. Most of our hospitals receive patients from all classes of society, and where there is this indiscriminate mingling of both sexes and of persons in all stations in life, undesirable intimacies and acquaintances, in certain mental conditions, will often be formed, that may at least prove somewhat mortifying to a sensitive mind after a complete recovery. Patients, especially females, should always be protected from everything of this kind during their residence in a hospital. For these and other reasons, lectures, and entertainments of various descriptions in the lecture-room where there is no communication between the sexes, or parties for one sex alone, will be found much more desirable than the gatherings previously referred to. If all the patients in a hospital occupy about the same social position, the frequent meeting of the two sexes may be less objectionable, but even then I should not consider it very desirable.

"Where only one hospital is built in a State, it will, of course, be prepared, as shown in the plan, for patients of both sexes; and even where there are two hospitals, in entirely different sections of a State, it will still be best that both males and females should be accommodated in the same building, because the conveyance of patients from great distances to an institution involves much labour and expense, is often injurious to the sick, and is really in itself an evil of much magnitude which ought not to be unnecessarily increased; where a community, however, is sufficiently populous to require two hospitals of the same general character in one vicinity, there can be little question but that many decided advantages and no disadvantages, will result from having one of the institutions appropriated to males, and the other to females exclusively.

"To those who realize properly the refining influence of female society, and the great importance of good nursing by women, during sickness, it may be said, that this separation of the sexes, so far as the insane are concerned, in no way interferes with the employment of women of high character and suitable age, education, and qualification, as nurses or companions in the wards appropriated to the men. This, indeed, has always been a part of the design of the writer in suggesting the plan under notice. It has, too, an especial advantage in enabling institutions to secure for the wards of the male departments the services of married men and women, having special qualifications, and who could not otherwise be thus employed. In many of these positions, these women, in addition to their social influence on the patients, would be valuable in securing the highest grade of ward housekeeping, although the author must frankly acknowledge, that in his experience the perfect cleanliness and excellent order of rooms, and the neatness and good taste shown in parlors, dining-rooms, and chambers, taken care of exclusively by men properly trained, cannot be surpassed. As a general rule, but not invariably, the females employed in the male wards should be the wives of men who hold positions of some kind in connection with the same portions of the hospital.

"It is scarcely necessary to say that the presence of male attendants is never to be permitted in the wards occupied by women, nor that of women—with the exceptions stated above—in the wards occupied by men, unless for special duties, by direction of the officers of the house.

"The Pennsylvania Hospital for the Insane at Philadelphia has now had an experience of twenty years with patients of both sexes in one building, and an equal period of experience with the sexes in separate structures. The results of the latter have been so clearly favourable there, manifesting only advantages, that I know of no official connected with the institution who would be disposed, under any circumstance, to abandon the system, or to return to one having the men and women in the same hospital. The plan has been adopted more or less completely in several other institutions in the United States, while it has received favourable consideration from prominent superintendents, who, owing to influences beyond their control, have been prevented from carrying out what they regard as a great advance in the management of the insane."

It would have given great pleasure to follow the author in what he says on the separation of the recent and chronic insane, always to be deprecated, on restraint and seclusion, on the question, "is there danger of the sane being admitted as insane?" on provision for insane criminals, on evening entertainments, and particularly to quote his charming chapter on a hospital day; but the assigned limits are already exceeded, and we must close, earnestly exhorting our readers to read the book for themselves, and be assured that they will find the most reasonable views, the most sensible recommendations, and the most practical suggestions in all matters pertaining to the care and treatment of the insane.

The publisher has done his part so well that the reader will not tire in looking over the clearly printed pages on such fine paper, and in carefully examining the admirable illustrations. J. C.

ART. XXIII.—*Transactions of State Medical Societies.*

1. *Transactions of the Medical Association of the State of Alabama. The Report of the State Board of Health. Annual Session. Montgomery, April* 12–15, 1881. 8vo. pp. 568. Montgomery, 1881.
2. *Transactions of the South Carolina Medical Association, Newberry, S. C., April*, 1881. 8vo. pp. 127. Charleston, 1881.

1. THE State Medical Association having been also constituted by the Legislature of Alabama the State Board of Health, the present volume of Transactions contains not only the ordinary annual proceedings, but also the report of the Committee of Public Health of the Board of Censors. The latter, a discursive report, discusses questions of quarantine, the collection of vital statistics, the care of the insane, and other sanitary questions, including, without explanation, a reprint of a lengthy paper by Dr. Geo. T. Angell, of Boston, upon the adulteration of food and drugs, which in itself occupies about thirty pages.

Nearly one-half of this volume is devoted to the minutes, special reports, and lists of officers and members. The actual papers and discussions occupy less than one-half, though some of the essays are of considerable length. The annual message of the President, Dr. Wm. H. Anderson, is a model address for the occasion, discussing especially the advantages of quarantine and the advancement of the standard of qualifications for the practice of medicine. In addition to the presidential address, there was an oration delivered by Dr. Milton C. Baldridge, whose appropriate theme was the Integrity of the Medical Profession. Among the prominent papers read before the session was one on the *Relation of Geological Formations and of Soil to Malarial Fevers, as Exemplified in Sumter County, Alabama*, by Dr. R. D. WEBB, ex-president of the Association, which is accompanied by two maps, geological and topographical. Sumter County is peculiar in its geological features. Being at the junction of the secondary and tertiary formations, crossed diagonally near its centre by the post-oak belt, overlaid in many places by the post-tertiary drift deposit of sand and clay, it presents a very great variety of soils, and gives opportunity for the study of their influence upon diseases in localities in juxtaposition. In regard to malarial disease with which this paper deals, the following observations are made:—

> "Enlargements of the liver and spleen are rare in the lime sections, while they are very frequent, almost the rule, in the mixed post-oak and alluvial sections." Summing up, Dr. Webb concludes that "every part of the country is subject to malarial influences. The cretaceous lime or prairie parts less so at present than other sections, and much less so than formerly, owing, no doubt, to the exhaustion of the vegetable matter in the soils under the chemical influence of the lime, and to the improved character of the water. In those sections of the county where we have the mixed soils of the post-oak, lime and alluvial deposits, malarial diseases are more abundant and varied in type, and also in these sections the sequelæ, especially enlarged spleens and livers, are most common. This is not from the severity of the attacks (for here the fever is often in a masked form and generally apparently milder than in the cretaceous section), but from the peculiarity impressed upon the malarial poison by the character of the soil. The tertiary or sand-hill section, with its numerous alluvial bottoms, also suffers to a considerable extent, the type being midway between the open high grade fever of the lime section and of the lower grades of the mixed alluvial sections."

Dr. F. M. PETERSON contributes a monograph, *Notes on Diphtheria in Alabama.* The combined local and general treatment is advocated;

using as an application equal parts of tincture of the chloride of iron and glycerine twice daily, a gargle of chlorate of potassium and inhalations of steam; the general treatment, calomel, and camphorated Dover's powder, the dose of calomel in children being from one and three-quarters to two grains, given until the bowels are freely moved several times. When commenced early, this treatment is believed to be of the greatest importance, rendering the disease more mild and manageable. It is only to be given in the first stage of the disease, and never with a view to salivation. After the intestinal tube is cleaned out, the tincture of iron and glycerine mixture is given internally every two or three hours. For adults, the commencing dose is fifteen drops of iron and twenty of glycerine. The patient should be well nourished, but not stuffed with food; nor are stimulants considered necessary. Ventilation of the apartment and disinfection of all discharges and fomites are required. Strychnia by the mouth or hypodermically is recommended in paralysis. Tracheotomy is not considered of much value in laryngeal diphtheria, except to relieve impending suffocation.

A paper somewhat similar in scope on *Pneumonia as it Appears in Alabama* is furnished by Dr. JOHN ALBERT PRITCHETT, to which are appended tables from Mobile and Montgomery, showing the relations of deaths from acute pulmonary troubles and the meteorology of each month. The Topography and Climatology of Lee County, by D. W. Floyd, M.D., and the Diseases of Greene County, by Thomas W. Pierce, also furnish valuable information of the diseases of special localities; in both places typhoid and typho-malarial cases occupy considerable medical attention. An epidemic of Rötheln in Sumter County is described by Edward Henry Sholl, M.D., of Gainesville. An interesting paper by Jerome Cochran, M.D., entitled *Sketches of Yellow Fever on the Gulf of Florida*, contains the substance of two reports made to the National Board of Health, but not yet published by it from want of appropriation. The author is now collecting materials for a history of Yellow Fever upon the Gulf Coast, which, from the systematic methods of inquiry adopted, and his great experience, will form a valuable contribution to the vexed question at issue. In regard to quarantine, he reached the conclusion that "a single completely equipped quarantine station, with hospitals and warehouses and adequate apparatus for disinfection, supplemented by inspection stations at the several ports, was sufficient to meet the quarantine needs of our whole Gulf Coast." This station should be central, and "placed as near as possible to the mouth of the Mississippi."

Among the shorter papers, one on the Gouty Diathesis, by Nicholas Gilmore Thomas, is deserving of special mention on account of its able analysis of the pathology of this interesting condition, and the just appreciation of the principles of treatment.

One of the features of the meeting was the Omnibus Discussion, led by Dr. S. D. Seelye, of Montgomery, which was well received and admirably conducted. This is worthy of adoption by other societies, for such a series of topics, with such suggestive remarks as these, could scarcely fail of being successful in eliciting the experience of those in attendance and initiating a lively discussion.

2. Quite a number of interesting communications are found in the present volume of proceedings of the *South Carolina Medical Association*, most of which are brief practical notes or reports of cases from practice.

The President, Dr. B. W. TAYLOR, selected for the theme of his annual address *The Hygiene of Infancy*, and improved the opportunity of conveying very useful information with regard to the temperature, bath, feeding, and causes of mortality, impressing facts upon his hearers that can scarcely be too often repeated. For instance, among some useful suggestions upon the subject of artificial food, the following pregnant truth is enunciated:—

> "In the administration of milk to children, it is always best to boil it; for, by so doing, we expel much gas whose oxygen tends to the formation of lactic acid, and we abstract a portion of its cream. Then again, should the milk contain vegetable germs or those of infectious diseases, this simple procedure would render it more safe and digestible."

Elsewhere he recommends the dilution of this cow's milk with a proper proportion of barley-water according to the age of the child, and a little white sugar; a very small amount of alkali or chloride of sodium, as recommended by Dr. Jacobi, is also approved. Many disorders of childhood might be prevented if the concluding words were generally heeded:

> "It must be recollected that the child is to be fed on this diet until the sixth or eighth month, and then may be allowed one or two meals a day of beef-soup and bread or butter and hominy, or oat-meal and milk, and when older be permitted to suck raw beef and eat bread. This diet must be kept up until ten years of age, and every means taken to prevent nurses and others giving the child other food which either contains insufficient nourishment or will certainly tax the powers of digestion without in any way possessing more nutritious value than those recommended."

Dr. Taylor could not have selected a subject of more vital importance than this which he discussed, for it is unquestionably a fact that thousands of children are sacrificed annually from the want of proper knowledge of the principles of infant hygiene.

A report of the Executive Committee of the State Board of Health shows good work done, and more in contemplation. The general distribution of reports upon endemic and epidemic diseases, and upon vaccination, will doubtless do much to create a healthy tone in the minds of the public upon these important topics, in which the average legislator cannot be made to take too much interest, nor will he take any, as a rule, until compelled by enlightened public opinion. The report itself says:—

> "Without the co-operation and assistance of the people, our work as sanitarians would soon have an untimely end. It is the part of the State and sub-boards to gain the confidence of the citizen in every way, and interest him in the work. . . . The field is so broad as to embrace within its bounds all men of education and culture."

Perhaps the Committee of the Pennsylvania State Medical Society, which has hitherto failed to secure the necessary legislation, may take a hint from this, and during the coming year, pay less attention to politicians, and more to the sovereign people. When the *vox populi* unmistakably declares in favour of a State Board of Health in this State, one may be established; we need scarcely hope for one before.

A remarkable case is reported by Dr. CORNELIUS KOLLOCK, under the title of *Polypus of the Cornea.* The growth had been once removed by excision, and had returned when first seen by Dr. Kollock. The tumour was about the size of an English pea, of a light gray or pink colour, with a delicate, but distinctly, marked pedicle, situated on the outer half of the right eye, about one line distant from the junction of the cornea with the sclera. An examination with a glass showed that it was not of conjunctival origin. It was readily removed, its base being included in elliptical incisions. No microscopic examination was made. There appeared to have been a remote history of injury.

Dr. J. G. Seabrook contributes an essay upon *Diphtheria*, in which he insists upon a recognition of its character as a general, and not a local disease, and points out its close affinities with scarlet fever, erysipelas, carbuncle, and malignant pustule. "The identity of membranous laryngitis or croup with diphtheria appears to be disproved by facts too evident to be disputed." In the treatment, chlorate of potash, in conjunction with the sulphate of quinine and Dover's powder, in very fractional doses, he uses with satisfaction. In the early stage, one or two applications of a strong solution of nitrate of silver (℈j–ij, to water and glycerine, each ℥ss), or in young infants hydrochloric acid and honey (equal parts) he uses with good results. The inhalation of an atmosphere, loaded with steam, and in older patients gargles of carbolized water (glycerite of carbolic acid ʒj–ij to water ℥x) three or four times daily are often serviceable. The atomizer is also used. Should there be embarrassed respiration, and apnœa from obstruction appear imminent, an emetic of ipecacuanha and sulphate of zinc or alum is recommended. Tracheotomy is not mentioned.

An essay on the *Sanitary Condition of a Ridge of Upper South Carolina, Oconee County*, is contributed by J. W. Spearman, M.D.; it is the type of a paper that does not find its way into State medical societies' transactions as frequently as it should. Giving, as it does, valuable geographical, meteorological, and medical information with regard to a portion of the State, communicated by a resident observer, it will still be valuable for reference, when most of our ephemeral medical contributions will have lost their interest.

An account of a case of *Acute Chorea successfully treated with Veratrum Viride* is given by F. F. Gary, M.D. The patient, a student at college, had an attack of acute rheumatism, and during convalescence violent chorea appeared. Ordinary treatment seemed only to aggravate the symptoms, until he was given large doses of veratrum viride. It is not stated what preparation was used. A cure resulted in two months.

Dr. Jas. McIntosh reports that for the last three years he has been using *Cinchonia* as a substitute for, and in preference to, quiniæ sulphas, and urges a more general use of this remedy, which he considers equally effective in malarial troubles. Children readily take it (cinchonia, twelve parts; sugar of milk, sixty parts; bicarb. soda, one part) dissolved in milk and water. Its cheapness is certainly a strong argument in favour of its employment.

Dr. C. R. Taber reports a number of cases showing, apparently, a direct relationship between uterine disease and attacks of hæmoptysis.

A curious case of Recto-Vesical Fistula in the female is communicated by Dr. J. R. Bratton, in which the uterus was retroflexed and retroverted, and a channel had formed above the uterus between the bladder and bowel. No operation was recommended.

Some peculiarities of *disease*, as it appears *in the negro* race, more particularly in the neighbourhood of Woodlawn, S. C., are considered in a paper presented by Dr. McKie, of Edgefield County. The tendency of malarial affections to appear in a modified form in the African race is noted. Pulmonary diseases, especially following measles, are prevalent and fatal; depletion is not well borne. Phthisis has become more common since the war, possibly owing to some changes in the habits, food, and mode of life. Abdominal diseases are not prominent; but nervous disorders, especially tetanus, are not uncommon. Recently malarial fever has assumed a typhoid character (typho-malarial?), and the treatment required is that of a low, continued fever.

Dr. Jas. Evans reports a case in which a dysmenorrhœal membrane, with openings corresponding with the os internum and Fallopian tubes (!), was discharged during gestation with a moderate amount of hemorrhage. "The novel feature in this case is the exfoliation of the membrane after pregnancy had advanced two months."

Dr. Thomas L. Parker reports several interesting *surgical cases.* A paralysis of the extensor muscles of the hand and forearm, from accidental division of posterior interosseous nerve by a pruning-knife, was completely cured by a suturing of the ends of the divided nerve, three months after the original injury. An instance is recorded of an abscess of the mastoid process connecting with a post-pharyngeal abscess. A very unusual case of chronic ozæna, of sixteen years' standing, in which a quartz pebble was found to be impacted in the inferior turbinated bone, resulted in necrosis of this bone, which was removed. A flea on the tympanum led in another patient to otalgia, hemicrania, and orbital neuralgia with ear-cough; its removal, after six months, was followed by relief of all the symptoms. A case of dysphagia from paralysis of the superior laryngeal nerve in a man of sixty years was followed by recovery after prolonged treatment. In a case of congenital dislocation of capsule and lens, with resulting excessive hypermetropia, "Convex 2½ increased vision for reading from one inch to two inches in both eyes, and enabled the patient to pursue her studies at school very comfortably." Finally, in another eye-case, "a piece of iron, half an inch long by one-fifth of an inch wide, imbedded in the vitreous chamber for seven years," was extracted (the patient refused to permit enucleation) through a scleral incision with immediate relief of urgent symptoms, and the integrity of globe eventually preserved. He could see light and count fingers obliquely from the nasal side. Three years after the operation, he had not had any further trouble; "the injured eye is as natural as the other, except the contracted pupil and the restricted vision." This concludes a remarkable series of cases, and a very interesting and highly creditable volume of transactions. The South Carolina Medical Association is apparently prosperous, and eminently deserves to be so, judging from the character of its proceedings. F. W.

Art. XXIV.—*The Practice of Medicine and Surgery applied to the Diseases and Accidents incident to Women.* By W. H. Byford, A.M., M.D., Prof. of Gynæcology in Rush Medical College, Chicago, etc. Third edition, thoroughly revised and rewritten. 8vo. pp. 682. Philadelphia: Lindsay and Blakiston, 1881.

A comparison of the latest with the previous edition of Dr. Byford's book gives the reader a startling idea of the progress of gynæcology. In the period covered by these two editions from 1867 to 1881, not only has it continued to occupy its old field, but has reached out in various directions, and appropriated to itself various operations once belonging to the domain of general surgery. In fact, it has been the aggressive branch of medical science, claiming its own wherever found, discovering new conditions, inventing new operations, and in truth, thinking for a moment of the view held by some, of the cause of cervical laceration, one might almost say that, allied with obstetrics, it had created the diseased condition for the cure of which, by a still more daring flight of genius, it has discovered the successful operative relief.

Dr. Byford calls the present edition "almost a new book," not only with an apparent increase in the number of pages, but by the removal of many subjects altogether, great space has been gained for the consideration of new topics, whose names even the index of his earlier editions omitted to mention. While the book retains its general characteristics of manner and method it will be found more ample, more polished, and a complete working book for the student of gynæcology.

The principal additions are in the chapters on laceration of the cervix uteri, perimetritis, cancer, fibroid tumours, ovarian tumours, and ovariotomy. In regard to lacerations of the cervix, the author explains the remarkable circumstance that the baleful effects of laceration remained so long undiscovered, by the fact that the symptoms accompanying the condition were so readily relieved, if only temporarily, by ordinary treatment, and we notice this as unconscious testimony to the fact, now almost forgotten in the glamour of operation, that it is by no means every lacerated cervix that requires surgical aid. Women are still recovering by local and general treatment from the ills that flow from this cause, are enjoying comfortable lives, and bearing children successfully, as they did before Dr. Emmet's researches in this direction. It is only where other means have failed, only where the discomforts really exist, that the operative procedure is demanded.

Dr. Byford does not take the absolute ground that lacerations of the cervix, any more than lacerations of the perineum, are always caused by the use of the forceps, simply saying, "the time has not yet come when the facts are at hand to justify such criticism," a criticism which threatens to create a sentiment adverse to instrumental delivery, such as existed after the first general introduction and frequent use of these valuable aids, and which the profession has only overcome during the last fifteen years. Statistics on this point, after all, only prove that the lacerations occurred with, not by, the forceps. In regard to their prevention the author leaves it vaguely to the skill of the obstetrician of the future, saying: "The probability is that it cannot be prevented in most instances in which it occurs."

In his method of operating the author differs but little from others, passing his wires by means of threads, a method now abandoned by many as tedious and unnecessary; he secures his sutures by twisting, and he insists, as an important condition for successful union, on a thorough cleansing of the opposing surfaces as each stitch is secured.

The chapter in the second edition on "Nitrate of silver and its substitutes" is appropriately replaced in the present by one upon "Occasional untoward effects of uterine manipulations and operations," a summary of Dr. Englemann's paper on the subject. The author's chapters on perimetritis and displacements are clear, full, and abounding in his own personal experience. Of cancer of the cervix he says, after reviewing the various measures advocated, that the removal of all the diseased tissues in reach with the curette and the use of the thermo-cautery "will promote the comfort of the patient more than any other measure."

Of fibroid tumours and their treatment by ergot he writes *con amore*, and it forms the most original part of the book, while in the second edition the whole subject is dismissed briefly under the head of "Tumours of the Uterus." The question of oöphorectomy for the arrest of growth of fibroids is discussed in Chapter XXXV. The key-note of the author's view is that the operation "leaves a large highly organized organ without its regulating apparatus, the subject of any morbific causes." The subject of ovarian tumours and ovariotomy occupies the concluding portion of the work.

In short, the book is brought up to the standard of to-day, and in most respects may be considered a reliable practical text-book, written by an earnest worker and a practical man. E. W. W.

ART. XXV.—*Transactions of the American Otological Society, 14th Annual Meeting.* Vol. II., Part 5, 8vo., pp. 511. Boston, 1881.

UNDER the head of *Suggestions Regarding the Treatment of Suppurative Otitis*, Dr. Theobald, of Baltimore, recommends the insufflation of a powder, composed of equal parts of finely powdered boracic acid, and oxide of zinc, and reports a number of cases illustrating this treatment. In some cases alum was substituted for oxide of zinc. Other members of the society have used the boracic acid powder extensively, and with good results, either alone or combined with other powders—as alum, tannin, oxide of zinc, or calendula.

Dr. D. B. St. John Roosa contributes a paper *On the Value of Operations in which the Membrana Tympani is Incised.* His estimate of their value may be best given in his own words:—

> "As for myself, I will say that I have given up all operations in cases of chronic proliferous inflammations, or, if you prefer the term, in chronic non-suppurative cases where there are, perhaps, adhesions between the ossicles, or between an ossicle and the promontory, and where there is no suspicion of retained mucus in the tympanic cavity.
>
> "I have finally rejected operations in these cases, because some experience of my own, in the way of division of the tensor tympani, insertion of an eyelet, attempts at maintenance of a permanent opening by means of incisions, and frequent paracenteses, have convinced me that these operations are inadequate to relieve tinnitis aurium, improve the hearing, or retard the advance of a disease which, as yet, must be pronounced as hopelessly incurable as chronic non-inflammatory glaucoma or atrophy of the optic nerves."

This honest confession of a most unpleasant clinical truth, coming from an acknowledged authority, and receiving, as it did, the unanimous approval of the society, is worthy of note. The question has been squarely met, and, as far at least as this country is concerned, these useless operations may be considered as having passed into history.

The puncture of the membrane to give exit to accumulations of fluid in the tympanum is, of course, another matter, and, in properly selected cases, is approved of by the author, though he does not consider it necessary to "incise every bulging drum head," and regards "paracentesis of the membrana tympani as an operation not to be lightly undertaken."

Dr. J. Orne Green, of Boston, treats of the *Removal of Foreign Bodies by Displacement forwards of the Auricle and Cartilaginous Meatus*, and reports a case in which the operation was performed. The patient fired two shots into his auditory meatus from a small pistol held close to the ear. Six days afterwards, "a semicircular incision was made above and behind the auricle, through the periosteum, and the periosteum with the auricle and cartilaginous meatus carried forward till the edge of the osseous meatus was reached; the insertion of the cartilaginous to the osseous passage was then cut through in its upper and posterior part, and three masses of lead were removed with forceps. The patient did well at first, but died in five or six days, and an autopsy showed that a small piece of bullet had penetrated the roof of the tympanum and entered the brain. Only one of the pieces of lead removed could possibly have been extracted through the external orifice of the meatus.

This operation was first suggested by Paulus Ægineta in 660, and has recently been recommended by Hyrtl, is approved by Von Troeltsch, and has been successfully performed once by Langenbeck, and three times by Schwartz. Dr. Roosa stated that he had successfully removed a bullet by this operation.

Dr. Charles H. Burnett, of Philadelphia, reports a case of *Malignant Growth in the Naso-pharynx with Early Aural Symptoms.* The patient, a physician forty-five years of age, applied to Dr. B. for relief from deafness. There were also some nasal catarrh and a sensation of moving fluids in his tympanum when he blew his nose. Bubbles were seen behind the membranes, and both membranes were punctured, with great relief to the hearing. The deafness, however, returned, the nares became more and more obstructed, and taste and smell failed. The nature of the disease soon became evident, and the patient died in four or five months. The microscope showed the growth to be a round-celled sarcoma.

A Case of Epithelioma of the Middle Ear, reported by Dr. Charles J. Kipp, of Newark, N. J., is interesting on account of its rarity. The patient, who was 50 years of age, had had an offensive otorrhœa since childhood, and the author suggests the possibility of a connection between the long continued inflammation and the development of the malignant disease.

Dr. Albert H. Buck, of New York, reports two cases of *Sudden Loss of Hearing in one Ear during an Attack of Mumps.* The first patient was a delicate girl, sixteen years of age. On the third day there was acute pain in the right ear, accompanied with a singing noise, and the following day, it was discovered that hearing was entirely gone in that ear. In the absence of any evidence of disease in the middle ear, the lesion, probably extravasation of blood, was referred to the labyrinth, and as there were no symptoms of auditory vertigo, the author concludes that it was confined to the cochleal portion. Reference is made to the suggestion of Vogel that the facial nerve seems especially adapted to convey the inflammation from the parotid gland to the internal ear. There was, however, no facial paralysis in this case.

The second patient was a man forty-five years of age. In this case also the aural symptoms appeared on the third or fourth day of the attack. There was complete deafness with a loud roaring sound, but no pain. On the fifteenth day, there were nausea and dizziness, and loss of equilibrium. No indication of disease of the tympanum. As to the seat of the lesion in this case, the author concludes that a second effusion of blood or inflammatory exudation took place in the labyrinth about fifteen days after the first attack, and that "while in the first attack it is fair to assume that the cochlea alone was involved, in the second, it may, with equal propriety, be taken for granted that an escape of blood or plastic exudation took place in the vestibule or in the ampullæ of the semicircular canals."

In the discussion as to the obscurity in regard to the path followed by the disease from the parotid to the labyrinth, Dr. John Green suggested that it was not necessary to assume direct connection from the facial region to the ear, and that the disease of the labyrinth might be a remote complication of mumps similar to orchitis.

Dr. Albert W. Buck, of New York, describes a case of *Vascular Tumour of the Membrana Tympani.* There was a vascular growth on each membrane, shaped like a mole or teat, and about a millimetre in diameter. The author considers such tumours in otherwise healthy membranes very rare.

Dr. Clarence J. Blake, of Boston, made a verbal communication suggesting a *selection of test words according to their logographic value.*

> "The comparative value of the consonant sounds one to another bear a fairly, but by no means absolutely, definite ratio. If, therefore, we take the consonant sound which requires the greatest force in production, which has, in other words, the greatest logographic value, and which would be most readily heard, and express its value as 100, and that of the other consonants accordingly, we have a table from which we may select the materials for a list of test words based upon the intensity rather than upon the pitch of the voice-force produced and serving, as in cases of chronic middle ear disease, for instance, as a measure of the obstruction presented to the passage of sound."

Dr. Samuel Sexton, of New York, exhibited a *flexible Eustachian catheter* made of soft rubber. The catheter is somewhat larger than those ordinarily in use, and is firm enough to be used without a stilette, and its introduction is less painful to the patient.

G. C. H.

ART. XXVI.—*Reseña del primer ejercicio del Instituto de Terapêutica Operatoria del Hospital de la Princessa*, por el Dr. FEDERICO RUBIO Y GALI.

Report of the First Proceedings of the Institute of Operative Therapeutics of the Princess Hospital. By Dr. FEDERICO RUBIO Y GALI. 8vo. pp. 220. Madrid, 1881.

THIS paper-bound volume is the report of a year's work done by an association which differs from any organization in this country with which the reviewer is acquainted. The Institute of Operative Therapeutics is connected with the Princess Hospital, and is organized for mutual instruction, which is obtained by studying the cases in the wards, dispensary, and operating rooms under the control of the Institute. No more than twenty-five subscribers are admitted in one year, each of whom pays a fee of about fifty dollars (250 pesetas). This however creates him a perpetual member, who is not required to subscribe for the further courses. No one is eligible unless he has the degree of Licentiate or Doctor in medicine and surgery. During the course of 1880–1881 there were twenty-three subscribers. The operative and administrative duties seem to have been given to those specially fitted by training or connection with the hospital to perform them. The arrangement of wards, beds, furniture, nursing, and diet, and the disposition of the specialties, such as orthopædics, laryngology, otology, and pathology, are related by the author, who states that laboratory work thus far has not been provided for, because of the impossibility of getting an apartment. Pathological and histological anatomy, however, have been awarded a certain amount of attention by arrangement with private individuals. The instruction is obtained by what is called "the familiar and mutual method" (p. 10); and by conferences at which various gentlemen examine the patients and give their views. Independent research and observation is of course encouraged. The titles of some of the conferences show that abstruse subjects are at times studied in this way by the institute. Among others the author mentions the following: The morbid responsibility of the tissues: Ruptures of the common vertebral ligaments: and Lateral and angular spinal curvatures.

In operative surgery the use of chloroform was general, and this agent was deemed as safe as other anæsthetics, if properly handled (p. 100). A special administrator of anæsthetics was designated for this surgical service. Antiseptic dressings were largely employed, and are favourably considered after a somewhat extended use.

Quite elaborate statistics of the patients treated and of the results are given; and as the operations include amputations, resections, tracheotomy, extirpation of larynx, laparotomy and excision of uterus, ligations, and nephrotomy, it is seen that capital surgery is well represented.

Some of the observations made have been already printed, it is stated, in *El Siglo Médico;* others are included in the volume before us.

Many of the cases are of an instructive nature and present important surgical points. One case of gastric fistula situated below the cartilages of the left ribs allowed observations on the process of digestion. In a case of nephrotomy, done after exploratory acupuncture and rectal exploration, hemorrhage from the supra-renal vein occurred, which was, however, controlled. No calculus was found in the kidney, but evidences of perinephritic inflammation and of renal disorganization were present. Nearly two weeks later death occurred. Many other cases are detailed. The volume concludes with three lengthy papers on laryngeal phthisis, tubercle and its curability, and etiology and treatment of laryngeal phthisis, presented at the conferences mentioned, by Doctor Ariza; and one on the art of amputating, apparently by the author of the volume. J. B. R.

ART. XXVII.—*Observations on Fatty Heart; Comprising Remarks on the Morbid Anatomy, Symptoms and Diagnosis, Prognosis, Etiology, and Treatment.* An Essay. By HENRY KENNEDY, A.B., M.B., University of Dublin, etc. etc. 12mo. pp. 171. Dublin: Fannin & Co., 1880.

THE title of this little volume by no means indicates the comprehensiveness and complexity of the subject selected by the author for his essay. It is, in fact, difficult for the reviewer to state concisely the general scope of the work, unless it be a confessedly incomplete account of the author's views upon what he terms the "fatty disease," a morbid condition of which "the two great divisions are known as fatty growth and fatty degeneration," and of which the further divisions, doubtless arranged for the sake of clearness of description, are laid down as follows:—

"The first of these must again be divided into the general state, affecting more or less the entire frame, and which is known as obesity, and the second as the same condition, confined to the heart alone."

Resorting to an unusual, but by no means original arrangement of the topics, the author treats of these two subdivisions of his subject, namely the "general state affecting more or less the entire frame" and "the same condition, confined to the heart alone," in a sort of interwoven manner, carrying them through the various headings of morbid anatomy, symptoms, diagnosis, prognosis, etiology, and treatment, now side by side, now round and round each other, now broadside on, and at all times in inextricable confusion, but never with the slightest semblance of orderly arrangement and progression. It is to this unfortunate disorder of arrangement in part, and in part, doubtless, to a still more inexact and inconsequential style, and most probably to other causes also, that is due the author's confession (p. 168) that he has "written more of what might be called *disjecta membra* than an essay," an opinion in which every reader who attempts the perusal of his book will heartily concur, at the same time thinking of the extreme "disjection" of the members caused by a sausage machine or the explosion of a naval torpedo.

All this is the more to be regretted, for the reason that the book contains much that, if read aright, is very valuable and suggestive; while many of the facts are the result of close observation and careful study by the now fading light of a long experience. It is to be regretted that the matter did not take the form of a book at an earlier date. In its present form it will escape the notice accorded to more methodical and concise monographs, either upon obesity or upon the diseases of the degenerative periods of life, including fatty degeneration of the heart from local or general causes. J. C. W.

ART. XXVIII.—*Health Reports.*

1. *Eighth Annual Report of the Secretary of the State Board of Health of the State of Michigan, for the fiscal year ending September* 30, 1880. 8vo. pp. 508. Lansing, 1881.
2. *Second Annual Report of the State Board of Health, Lunacy, and Charity of Massachusetts*, 1880. *Supplement containing the Report and Papers on Public Health.* 8vo. pp. 197. Boston, 1881.

1. THE handsome volume from the *Michigan* Health Board, is unusually rich in interesting material, even for the valuable series to which it belongs. It comprises in addition to the customary suggestive Report of the able Secretary, Dr. Henry B. Baker, of Lansing, the proceedings and addresses of the Sanitary Convention at Detroit, and the transactions of the Sanitary Convention at Grand Rapids, both of which highly successful gatherings of Sanitarians were held during the early part of the year 1880. Much useful information upon a great variety of hygienic subjects is afforded in the well-written papers of these two meetings.

Among the special reports to the Board itself, perhaps the most important are those in regard to Diphtheria, Scarlet fever, and Smallpox; in which an earnest effort appears to have been made, by combining the investigations of numerous independent observers, to discover the best methods of preventing the development and spread of these terrible maladies. With such an abundance of material as the soil of Michigan seems to produce, and such enthusiasm as her physicians manifest, we may hope for some strikingly valuable results, as these observations are prosecuted in the light furnished by Pasteur's recent wonderful researches concerning the "Germ Theory of Disease," and H. C. Wood's, in regard to the essential role of Bacteria in the production of Diphtheria.

At the Detroit Convention, instructive essays were offered on the *Contamination of Drinking Water by Filtration of Organic Matter through the Soil*, by Prof. V. C. VAUGHN, of Ann Arbor; on the *Prevention of Pulmonary Consumption*, by Prof. H. F. LYSTER, of Detroit; on *Sanitary Rewards and Punishment*, by Hon. H. W. LORD, of Detroit; on the *Use of Household Filters for Potable Waters*, by Dr. Albert H. Prescott, of Ann Arbor; on the *City of Destruction* (meaning Memphis, Tennessee), by Professor R. C. KEDZIE, M. D., President of the State Board of Health, and on *Adulteration of Food*, by Professor CARL JUNGK, of Detroit. The paper by Prof. C. J. LUNDY, of Detroit, on *Imperfect Vision Caused by Imperfect Schools*, ably urges the correct principles which should guide educators in this important matter, as briefly set forth in a review of Cohn and other authorities on school hygiene in our columns a few years since. Dr. J. S. Billings, whose immense experience so amply qualifies him to act as the fly-wheel for the hygienic machinery of America, moderating the excessive activity of youthful enthusiasts, made some amusing and pertinent remarks about the needless dread of carbonic acid, apropos of the subject of ventilation.

At the Grand Rapids Convention, after an interesting address by the Right Rev. G. D. Gillespie, President, Dr. H. B. BAKER read an excellent essay on the *Importance of General Sanitation to the Public Welfare and a Plea for Better Methods*, the whole of which is well worthy of careful study by every one interested in the care of the health. His paper was followed by one from the Rev. J. MORGAN SMITH, of Grand Rapids, on the *Duty of the Christian in Respect to the Laws of Health*, in which he takes the unassailable ground that "established sanitary knowledge involves a general Christian duty, under the command of Christian justice—to do by others as we would they should do by us; and the spirit of Christian love which worketh no ill to its neighbors." Several articles on sewerage, on school hygiene, etc., compose the rest of the report of this Convention.

The latter half of the volume is largely made up of Secretary Dr. H. B. Baker's compilations of the reports from all parts of the State, in regard to the diseases, meteorology, etc., during the year 1880. These deductions are admirably illustrated by improved charts, designed by Dr. Baker, and constructed on the plan which he has laboured so much and so worthily to popularize. There are also appended an elaborate series of observations on the *Causation of Intermittent Fever*, comprising an investigation into the meteorological and other conditions governing its production, by A. W. NICHOLSON, M.D., of Otisville, Michigan; an essay by J. H. KELLOG, M.D., of Battle Creek, on *Emanations from Decaying Wood as a Cause of Disease*, in which the author contends that wood, and especially large masses of sawdust undergoing decay, taint the atmosphere and give rise to zymotic diseases, particularly those of a malarial character; and two papers on the important, though but little understood, subject of ozone in the atmosphere. The first of these latter articles, contributed by Dr. J. Mulvany, of the English Royal Navy, comprises the results of observations made under most of the varied conditions of climate, met with between the Doggerbank on the North, and the Falkland Islands on the South. Respecting the connection between the amount of atmospheric ozone and disease, Dr. M. remarks that during the cholera epidemic of 1871 in the East, the ozonic condition presented no peculiarity either in paucity or abundance; also that he has seen consumption rare both in countries where ozone is usually abundant, and where it is commonly deficient, so that he does not believe that ozone tends either by excess or deficiency to promote this disease. The only influence which in Dr. M.'s opinion ozone has upon the human system, is that which it appears to exercise upon the procreative functions, its excess seeming to increase the chances of fecundation, in one of the instances noted in the proportion of 100 to 57, in a village of Ceylon. Dr. A. W. Nicholson, in the second of these interesting essays upon ozone, records a multitude of observations with Schonbein's test-papers, which seem to show in a general way that the air of a pine forest, contained less ozone in winter and more in summer than the open country air; that the air over charcoal pits contained decidedly less ozone than that of the open country, both by night and by day; that the impure air near decomposing animal excreta had its amount of ozone materially diminished, etc. etc. Dr. N. finally concludes that many of the results of ozonometric observations are clouded with error, and that much study is yet necessary, before the best methods for accurately estimating the quantity of ozone present at any time in the atmosphere will be determined. Dr. Nicholson disputes the opinion of Prof. Von Pettenkofer that because ozone can never (he says) be detected in our dwellings, its hygienic value does not seem to be very great; asserting that he has several times discovered ozone in houses where ventilation was prevented, and suggesting that the volume of smoke which usually, though imperceptibly, escapes from the stove or heater, contains some material, perhaps sulphurous acid, that causes a change in the iodine as rapidly as it is liberated, resulting in the formation of a colourless iodate on the test-papers, which of course renders utterly fallacious the conclusions from Schonbein's test.

The first article in the *Massachusetts* Health Report, is one on *The Pollution of Streams*, by W. E. HOYT, C. E., which consists of the results of a careful and minute examination of the condition and chief sources of danger, from a sanitary point of view, of the Deerfield and Miller rivers, in the west-central part of the State. Such investigations have of course chiefly a local importance, although their usefulness and indeed their vital necessity is so great, that the excellent example here set should be followed in every town, village, and rural district throughout the land.

A thoughtful paper on *The Separate System of Sewerage*, by Mr. E. C. CLARKE, considers the highly-praised method recently put in operation in Memphis, Tennessee. The conclusions arrived at are, that where cellars are so low that they must be drained by pumping, this system of conveying away the surface and roof water, separately from the sewage, is necessary, but that in other cases its only merit is its cheapness, and even where this is important, the separate system would only be advisable where a good fall (one in the hundred) could be obtained. When storm water flows off by surface drainage, the first cost of sewers for sewage only is about sixty per cent. of the ordinary method, but the final economy will depend on circumstances. In places where on account of the inconvenience and damage from surface drainage of rain, which increases with the growth of a town, it becomes necessary to carry off storm water underground, from closely built up and densely populated districts, and where new sewers must be constructed for the purpose, the combined system is evidently the cheapest.

Dr. J. F. A. ADAMS, of Pittsfield, Massachusetts, contributes an able essay on *Intermittent Fever in Massachusetts.* It is a curious and interesting fact that at the first settlement of the State, people built their houses on the hill tops to avoid the malaria of the valleys, but with the clearing and cultivation of the country this disease poison seemed to wholly disappear. From 1800 to 1850, ague was almost unknown, as an indigenous malady, in New England, but in the latter year it gained a foothold in Connecticut, on the shore of Long Island Sound, and about 1864 began a northward march across the western half of Connecticut and has steadily pushed forward, until in 1875 it reached the northern boundary line and stepped over into Massachusetts in 1877. In the three following years it made a further rapid advance, invading a considerable number of towns in the latter State. This paper is illustrated with maps and plans, and exhibits the results of a large amount of industrious and painstaking effort, to collect accurate information respecting the progress, apparent causes, and coincident events of the disease, so that it forms a useful contribution to the literatûre of malarial affections.

School-House Sanitation is the subject of a long paper by ERNEST W. BOWDITCH, C. E., of Boston, in which are reported the results of a very extended examination of school-houses in various parts of the State. Among the author's conclusions which we notice with approval are, that in school architecture it should be carefully provided for, that girls between the ages of thirteen and twenty ought not to go up and down stairs more than is absolutely necessary; that urinals create most of the smell usually attributed to water-closets, and in almost every case a smell is due largely to lack of janitor's work, so that it is a popular fallacy that such places cannot be kept clean and free from odour; that whilst light is better supplied from the sides of a school-room, the question of ventilation by the aid of the windows complicates the problem, so that it is not yet fully settled; and that where there is a public water supply, of recognized purity, it is better to depend on it, than on well-water, though if well-water is resorted to at all, the well should be kept in constant use. The method of warming school-houses, says Mr. Bowditch, through indirect steam heat, that is, where the radiators are all boxed up at or near the ceiling of the basement, and currents of outside air are passed through them, and then up into the rooms and hallways, is thought to be the best devised. Too often, however, in cold weather "cellar-air" is used, and the method then becomes highly objectionable. Next to well managed indirect steam, in point of efficiency, is furnace heat, then follows direct steam heat, and lastly heating by stoves. Open fires (of course the best of all) are unfortunately excluded on account of cost.

The volume concludes with some interesting papers on *The Health of Towns*, comprising the account of an *Epidemic in Adams*, by J. F. A. ADAMS, of Pittsfield; an article on the *Sanitary Condition of Holyoke*, by E. W. BOWDITCH, C. E.; and one on *Neglect of Vaccination*, by Z. B. ADAMS, of Framingham. J. G. R.

ART. XXIX.—*Lectures on the Surgical Disorders of the Urinary Organs.* Delivered at the Liverpool Royal Infirmary, by REGINALD HARRISON, F.R.C.S., etc. Second edition, considerably enlarged. 8vo. pp. 399, with plates. New York: William Wood & Co., 1881.

THREE years ago the author of this volume issued one of modest pretensions, but of considerable merit, which was noticed in these pages, and of which this is the successor. The title-page has been changed to correspond with the wider range of subjects now treated of, and this "second edition" is, in many regards, to be looked upon as a new book. In it the author considers the nature, causes, and treatment of stricture of the urethra, suppression and retention of urine, the operations for urinary abscesses, and fistulæ, the management of foreign bodies in the bladder or urethra, irritability of the bladder, inflammation, disease of the prostate gland, urinary concretions, and the means of removing them, with injuries of the bladder, ureters, and kidneys, deformities of the penis, and finally, varicocele.

The easy colloquial style of clinical lectures is favourable to the presentation of matters related to, if not directly in the line of the subject under consideration. This is happily exemplified in the book before us, where some very interesting and valuable suggestions come in by the way, as it were.

The author has adopted Dittel's classification of strictures according to the seat of the obstructing body, viz.: 1, within the lumen of the urethra; 2, in its wall; 3, outside of its wall. He calls attention to the extremely important fact that strictures are not always concentric; that is, the passage is sometimes to one side of the real axis of the urethra. Again he dwells upon the influence exerted by the "temper" of a stricture: an element which sometimes plays such a trick as to permit a tyro to pass an instrument easily into a bladder after a practised operator has attempted it quite in vain.

Apropos of what is sometimes called nervous, or spasmodic stricture, we find allusion to Sir James Paget's capital expression of "stammering with the urinary organs"—and excellent advice as to the principles which should govern the moral or mental treatment of such cases. Curious methods, adopted by patients to start their water, are given, and stress laid upon the necessity of suppressing the contemptuous mental attitude which some of these would be apt to excite.

> "You will not cure your patients," says the author, "by asserting your belief in the non-reality of their ailments, but having carefully established the absence of any organic disease, you may, by your counsel and advice, as well as by your medicine, often do much in restoring the nerve tone which is deficient, and so prevent the patient drifting into a hopelessly depressed mental condition." And again, what is equally important, "In arriving at the conclusion that a case of impeded or hesitating micturition is functional and independent of structural alteration, you must remove all source of error by a careful physical examination of the urethra. If you learn to acquire delicacy and tact in the use of urethral instruments necessary for the purpose, you will never give your patient cause to regret that he has submitted to such an exploration; on the contrary, in the absence of true stricture, he will be comforted by the assurance that he can be completely and permanently relieved."

Eighteen pages are given to considering the examination of the urine. This chapter appears to us,—notwithstanding the author's explanation that it is not meant to be full—to be too unsystematic. It would do well enough for an informal talk with another medical man, and few but would be the wiser for listening to it; but for a chapter of a book, and even for a clinical lecture, it is susceptible of considerable improvement. For example, a method of testing for albumen might be set down, and the remarks on blood in the urine enlarged so as to distinguish better between its various sources. One sentence in this chapter, however, might be taken to atone for more omissions that occur. This is the following: "The detection of albumen, under these circumstances must be followed up by a careful microscopical examination of the urine, in search of casts or other direct evidence of renal mischief." The word "must" is exactly the right one, and the clause "under these circumstances" should have been left out, and the exhortation should apply to every case where albumen is discovered in the urine.

Speaking of gradual dilatation of strictures, the good maxim, "Festina lente" is wisely quoted, and emphasized with the statement, "I do not know anything which interferes more with the treatment of urethral affections than the apprehension, on a patient's part, of undergoing a repetition of catheterism where bleeding and pain were the chief features of the preceding one."

For exploring the urethra, the author prefers a plain bougie, and does not believe in the olive pointed ones.

When he leaves an instrument in the urethra to effect dilatation, he always watches the patient's temperature, and if a rapid rise occurs, withdraws the instrument at once. He believes that the use of anæsthetics goes far to prevent urethral fever, and that aconite is "almost a certain prophylactic when administered in two minim doses of Fleming's tincture immediately after catheterism." He says that if, before thrusting in an aspirating needle to empty the bladder of retained urine, the finger be pressed firmly down about the pubes, till a pit is formed, the passage of the needle is absolutely painless.

When speaking of internal urethrotomy, the author alludes to the standard of calibre, for the urethra, set up by Otis, and the practice of dividing the tissues when this seems to be ever so little encroached upon. This practice Dr. Harrison deprecates and arrays himself with those more conservative men who have not been carried away by the fascination and ingeniousness of Otis's views.

The ninth lecture contains the discussion of external urethrotomy and a full description of the operation and instruments devised by Mr. Wheelhouse, of Leeds. This is illustrated by cuts which complete all that is needed to its comprehension, and which confirm the impression, made by the text, of its simplicity and value.

In treating of syphilitic strictures, the author expresses himself as a dualist, and distinguishes clearly between the local lesion, chancroid, and the initial lesion of the constitutional disease, syphilis. He accepts, as showing the tonic properties of small doses of mercury, the investigations of Keyes and others, who found the red blood-corpuscles to be increased in number by their use. We must not be too fast in adopting this conclusion, however; for more recent experiments make it doubtful whether the number of the red corpuscles is always a reliable index of the state of health. It may be true, but we are not quite sure of it yet.

Turning to the subject of the formation of urinary calculi, we find a very good exposition of the subject; but cannot but feel that it would be better if the author were familiar with the investigations of Ultzmann, of Vienna. For the removal of calculi by cutting, the author rejects every method but that of Cheselden, the left lateral operation. He dismisses the supra-pubic operation without grace. For which we would like very well to have a word with him; but we cannot give time or space to it now. Of Bigelow's operation of litholapaxy he says, "An increasing experience in this mode of operating leads me to believe that Dr. Bigelow's practice will materially add to our resources for the treatment of stone."

When treating of tumours within the bladder, the author calls attention to the possibility of exploring this viscus by "rectal palpation," after the plan suggested by Simon. That this method may not always give reliable results may be inferred from an occurrence witnessed by the writer of this review, while assisting in an operation of perineal lithotomy. The operator having failed to find the stone, after repeated and fruitless attempts to discover it, a bystanding surgeon bared his arm and thrust his hand far up the rectum. The thoroughness of his exploration he demonstrated by protruding the wall of the abdomen upon his fingers. He declared there was nothing between his hand and the walls of the pelvis, and asserted positively there was no stone in the bladder. Another surgeon, then present, would not, even on this testimony, give up, and a happy movement of the forceps soon discovered a stone, which, being drawn out, was found to be almost the size of a small egg.

The author shows a creditable familiarity with the English and American literature of his subject, and makes a few references to Continental surgeons. It is surprising to an American, meeting the names of Gouley, Otis, Keyes, etc., to miss that of Gross. The author might also learn from the books the methods of treating exstrophy of the bladder used by Maury and Bigelow.

In conclusion, we would heartily commend the agreeable style, the moderate tone, the instructive suggestions of the work. It is a credit to its author, and ought to prove useful to any reader. Nevertheless we must say that we think its value would be increased if it were made more systematic and less colloquial. At the same time care might be taken to describe all the instruments figured, and all the important operations referred to. The "plates" might be left out without defrauding the artistic side of the reader's nature, and words like "twizzling" might be translated into good English for the benefit of Americans. C. W. D.

ART. XXX. — *Anatomical Studies upon Brains of Criminals. A Contribution to Anthropology, Medicine, Jurisprudence, and Psychology.* By MORIZ BENEDIKT, Professor at Vienna. Translated from the German by E. P. Fowler, M.D., Department of Translation, New York Medico-Chirurgical Society. 8vo. pp. 185. New York: Wm. Wood & Co., 1881.

AT this time, when the case of Guiteau is awakening world-wide attention, a monograph on the brains of criminals cannot fail to be of interest to physicians and criminalists. The psychology of crime, and the responsibility of criminals are, indeed, questions which are daily becoming of graver importance to science, society, and the law. The memoir of Benedikt is a valuable contribution towards the scientific solution of these questions. It embodies a large amount of work. The author launches forth with an endorsement of the doctrine, as old as Erasistrates, that man thinks, feels, desires, and acts according to the anatomical construction and physiological development of his brain. He affirms his belief that the proposition of Erasistrates has received continually increasing support through the increasing knowledge of the brain and its bony cask; and the main object of his research is to ascertain whether the criminal class does not furnish data which testify in favour of this proposition. He seeks to determine, by an examination of the brains of criminals, the anatomico-physiological explanation of the great truths, which are well put in the following quotation from his preface:—

> "*An inability to restrain themselves from the repetition of a crime, notwithstanding a full appreciation of the superior power of the law (society), and a lack of the sentiment of wrong, though with a clear perception of it,* constitute the two principal psychological characteristics of that class to which belongs more than one-half of condemned criminals.
>
> "A consideration of no less importance is the fact that the same defect of moral sensibility and will may remain concealed by superior mental organization and greater dexterity in criminal contrivance, or it may be obscured through complications with mental disorder."

Two types of brains are described by Benedikt. The first is the normal type with the typically separated fissures, that which is described and pictured in the works of Ecker, Charcot, and Ricket. The second is the type of confluent fissures. "The most important characteristics of this type consists in this: *If we imagine the fissures to be water-courses, it might be said that a body floating in any one of them could enter almost all the others.* There are also absent a great number of annectants, which are important cerebral territories, the absence of which represents so many aplasias." Benedikt believes that he has discovered that the brains of criminals belong to this second type. His conclusions are drawn from the results of observations, apparently made with care, upon brain specimens from twenty-two criminals. They are, therefore, not to be lightly set aside. According to him, "criminals are to be viewed as an anthropological variety of their species, at least amongst the cultured race." Valuable observations are recorded on the relations of the cerebellum to the cerebrum, and on certain "animal similarities" to human brains of low grade.

Our own studies of the human brain have been chiefly made at the Philadelphia Hospital, many of the pauper patients of which institution constitute the same sort of material as that referred to by Benedikt as approaching the criminal type, those who have suffered complete shipwreck in life through a low grade of intelligence, imperfect motor development, or through crimes and vice; for instance, inebriates, epileptics, prostitutes, etc. Independently of any knowledge of Benedikt's researches, we have ourselves frequently observed and called the attention of our classes to the unusual and peculiar development of cerebral fissures in many of these cases. The views of Benedikt are, however, of an importance too far reaching to be precipitately adopted. C. K. M.

ART. XXXI.—*Report of the Medical Missionary Society in China for the year* 1880. 8vo. pp. 28. De Souza & Co., Hongkong, 1881.

THE forty-second annual meeting of this society was held in Canton on the 20th of January, 1881, and the chief interest in its series of yearly reports centres in the work done in the Hospital of Canton, under Drs. Parker, Kerr, and Carrow. The society was organized at Canton, February 21, 1838, three years after the opening of the Ophthalmic Hospital of that city by Dr. Parker, who is still living, being now a resident of Washington, D. C. To the late Drs. James H. Bradford and Coxe, of Philadelphia, belongs the credit of initiating the practice of western medicine in Canton, they having opened a dispensary in 1828, which was so largely patronized by the natives, that the health of Dr. Bradford gave way under the effects of the labour and climate, and he was forced to abandon the project, and return home. He was the Port Physician of Canton for three years, and took a very great interest in his dispensary work, which was an additional voluntary labour on his part. The present general hospital, under the supervision of Dr. John G. Kerr, is a gradual growth of the work of the Missionary Society and its able medical superintendents. Dr. Parker having the advantage of a vigorous constitution, continued in even more active service down to 1854, when he was succeeded by Dr. Kerr, who has been in charge ever since, with the exception of the years 1876, '77, and '78, when Dr. Carrow relieved him, he has therefore had a Chinese hospital experience of about twenty-five years.

The *out-patients* (prescribed for mainly on Mondays and Fridays) for the year 1880, numbered 16,860, of whom 3095 were females; and the *in-patients*, 1121, 772 males, and 349 females. The chief operations performed were, removal of urinary calculi 48, 26 by lithotomy, 13 by lithotrity, 7 from the urethra and 2 from the prepuce. Of the lithotomy cases, 3 died; and of the lithotrity, one. Removal of cancerous (30) and other tumours, in all 65. Extraction of cataract 41, and division 8, or 49 in all. Ovariotomies 4, 2 fatal. Amputation of arm 1, toes 2, penis 2. Operation for entropium 129, and pterygium 13.

As the native physicians, except those educated in the hospital, never practise minor surgery, a very large proportion of the surgical cases belong to this class, such as opening of abscesses, 155, etc.

Dr. Kerr had at one time nearly abandoned the operation of lithotrity, as it was quite as fatal as lithotomy, and much more tedious; the lithotomy cases averaging only seventeen days in recovery; the improved method of Dr. Bigelow, which Dr. Kerr characterizes as "one of the greatest improvements of modern surgery," has caused a revival of the crushing operation; and in all the cases given, except two, the stones were removed at one sitting. Preputial calculi are so common among the Cantonese, that they have been removed in large numbers by the operation for phymosis, and the collection of specimens in the hospital is thought by Dr. Kerr to be the largest in the world.

Entropium is so common an affection with the Chinese, that the operation for its relief has been performed in some years, on an average, more than once daily. *Ectropium* is a much less common malady. The operations for the former appear to have been much less numerous than in some previous years.

Ovariotomy was performed four times within the year by Dr. Kerr, with a favourable result in two cases. Previous to 1880, there were but two operations, one incomplete, by Dr. Kerr, and one complete, by Dr. Young, of Hongkong. The former was the first attempt of the kind in China, and failed in consequence of extensive adhesions. The woman recovered from the effects of the incision, the case of Dr. Young died. The successful operations were performed upon two women, 26 and 33 years old respectively; and the tumours removed weighed 38 and 49 pounds.

Necrosis is much more common in China than here, particularly of the jaws, as the native physicians do not extract decayed teeth, and disease extends from them to the bones.

Early in the history of the Canton Hospital, it was designed to make it ultimately the "Canton Hospital Medical College," and to this position it is gradually approaching. The Chinese pupils are instructed in anatomy and the practice of medicine, by Dr. So-To-Ming; in materia medica by the senior pupil, Lo-Shun-chi; and in chemistry and clinical medicine, by Dr. Kerr. The death of Dr. Fun Wong, Dr. Kerr's chief hospital assistant, has reduced the hospital staff and faculty. When a full corps of professors for all the branches is obtained from the graduates, the college will be formally organized. Women are now being educated as midwives.

R. P. H.

ART. XXXII.—*A System of Surgery, Theoretical and Practical, in Treatises by various Authors.* Edited by T. HOLMES, M.A., Cantab. First American, from second English edition, thoroughly revised and much enlarged, by JOHN H. PACKARD, A.M., M.D., assisted by a large corps of the most eminent American Surgeons. In three volumes. Vol. I. 8vo. pp. 1007. Philadelphia: Henry C. Lea's Son & Co., 1881.

NOTWITHSTANDING the many and important additions to the list of surgical books during the past ten years, the need of a standard work of reference has asserted itself more and more strongly as the freshness of the edition of Holmes of 1870 began to fade. No better evidence of the growing activity of surgical science in this country could be afforded than the appearance of an American edition in the field. Such an event is worthy of special note as marking a new era in our medical literature in which American authors will undoubtedly assume a much greater prominence than they have hitherto occupied. The selection of Dr. John H. Packard, of Philadelphia, for the responsible task was eminently appropriate, and one upon which the publishers have every reason to congratulate themselves. The present volume, although containing much that has already been noticed in these columns, has many features in the old as well as the new text which it may not be inappropriate to take this opportunity to allude to.

It would be difficult to determine precisely upon what basis the author of a treatise on surgery may have arranged the order of his subjects. It is quite evident that surgical writers are in no way subservient to routine, and that individual tastes, or what is more likely, the exigencies of authorship and publication frequently prevail over a scientific classification. There appear, however, to be no special difficulties in following the latter method. There can in the main be but one which would lead the student, as the novelist does his reader, from one page to another in the story of surgery, each chapter serving as a preparation for the one which is to follow. The study of regional or operative surgery is manifestly of little value without a previous familiarity with the principles which govern morbid processes in general; a study of nutrition and inflammation with all its varieties and complications, paves the way for an intelligent understanding of certain constitutional diseases, as syphilis or even of tumours. Having thus disposed of general pathology, the student is prepared for special studies of diseases and injuries of tissues and regions, and it is not until he has mastered all these that he is fit to be entrusted with the responsibilities of operative surgery. Although, in a general way, this plan has been adopted in Holmes's Surgery, there are certain departures from the rule for which we find it hard to account. The complete separation of the chapter on pathology of wounds from those on inflammation, the indiscriminate distribution of pyæmia, hectic fever, and allied processes in different portions of the volume, the treatment of such subjects as abscess and ulcers as special morbid processes in a chapter immediately following tumours, are features which betray an insufficient appreciation of the great advantages of a thorough scientific arrangement, not only to the beginner but to one who might wish to inform himself of the bearing of modern progress in science upon any or all of these branches of one subject. We have always felt that the separation of injuries from diseases of given localities was a great defect in the arrangement of the work, entailing incompleteness or repetition in corresponding parts and great inconvenience to the reader. Such changes of position which have been made in the present edition we are, with one or two exceptions, not inclined to regard as improvements. One great difficulty inherent in the present undertaking, which to an editor must have been an unpalatable condition, was the necessity of leaving the old text as it stood. It is greatly to the credit of Holmes's staff of writers that their articles have sustained so well the test of time, and yet it is often painfully apparent to the careful reader that the scissors could have been plied more effectively than the pen.

The volume opens with the article on inflammation, by Dr. Burdon Sanderson, which, owing to many important observations in this department of surgical pathology, carried on at the time of preparation, was deferred to the last volume of the former edition. There is therefore less to be added than one might have expected in so important a department of pathology and one so constantly the subject of investigation. One familiar with this kind of work cannot fail to be impressed with the apparent freshness of the article in which in these rapidly moving times a decade would ordinarily suffice to betray the marks of age. One does not perhaps get all the satisfaction one may seek in the explanation of the disorders of the circulation in inflammation, the writer being content to group together some of the more important experiments bearing upon the innervation of the bloodvessels than to frame theories that might prove more satisfactory to the average reader. A brief summary of physiological work in this field would have been a valuable addition by the reviser.

The history of the passage of leucocytes through the walls of bloodvessels is so complete that the only addition which Dr. Simes finds to make is the suggestion that the distension of the vessel-wall causes a separation at many points of the cellular cement substance, and that it is through these so-called stomata that corpuscles migrate. One noticeable feature of Sanderson's views is the very decided ground which he takes in favour of the activity of the fixed connective-tissue corpuscles, particularly as illustrated by the behaviour of the corneal corpuscles in the earliest stages of traumatic keratitis; also, the fixed corpuscles of the sheath of muscular fibre, the epithelium of the conjunctiva where the young cells are supplied from the cells of the part by an endogenous growth, some of them actually escaping from a formed cavity in the parent cell by virtue of its power of amœboid movement. Dr. Simes also shows that a similar germinative process may be observed in the endothelium of veins, in the epidermic layers of the skin and elsewhere. .

The difficulty connected with an attempt to revise so great a work on the plan adopted in this edition is apparent when we turn to that portion of the process of inflammation which has been handled by Mr. Simon. The changes necessary in the second edition had already left the subject in a somewhat involved state, which has become more apparent now that the new and the old are brought within the limits of the same volume. Much of Mr. Simon's pathology, although penned by the hand of an able writer, belongs to an era that has passed, and could well have been omitted, while its retention by the reviser appears to give it his indorsement. One who has attempted for the first time to conquer the intricacies of the various theories bearing upon the inflammatory processes would, we think, soon become lost in hopeless confusion. It is somewhat discouraging, after groping about in this chapter, to feel that the force of all that one has been reading is invalidated by some such statement as the following: "When pus accidentally passes up the vein of an extremity . . . and give rise to the multiple suppurations which are so characteristic of pyæmia." It would be a consolation to have been rewarded by the reviser with a summary of what has been done up to date in the study of the relations of organisms to disease, particularly in view of the impetus which this branch of study has lately received. The existence of great confusion in prevailing theories is, we think, hardly a sufficient excuse for its omission. The concluding chapter on the treatment of inflammation contains much that is interesting to the student, but in its practical aspect partakes somewhat too largely for the present day, or perhaps it might more appropriately be said for this country, of mercurial and antiphlogistic modes of treatment.

Similar criticisms can be made on the chapters on the surgical fevers, although Dr. William Hunt has not felt called upon to make an addition to them. We find no preliminary observations on the pathology of fever, if incidental allusions in the article on inflammation are excepted. We are ushered immediately into an account of "hectic" fever, the very term selected betraying an ignorance of its true pathological character. We are informed that this variety of fever occurs "when a local disease . . . maintains an habitual state of febrility." No comparison is drawn between this and those forms of fever which persist as an accompaniment of excessive suppuration in wounds. Nor is any distinction made between the latter and common traumatic fever, which is also described. Mr. Croft alludes both to septicæmia and pyæmia, yet in the article on pyæmia, by Mr. Callender, we find no allusion to the former variety. As a form of septic fever, distinct in its clinical symptoms and pathological changes from pyæmia, and recognized as a separate variety by the most eminent pathologists of the day, it certainly deserves mention. Undoubtedly our knowledge of the whole subject of septic poisoning is in a transition state, and time will bring about many and perhaps greater changes in our views of these diseases even than the last few years have developed, but this does not preclude an attempt to present the subject in a form more in accord with modern views. The description of pyæmia includes the embolic theory, which is fairly given; there is a long argument to show that pus does not find its way into the blood, but we fail to discover that any space is devoted to the etiology of this disease, or allusions to putrefactive changes in the wound, the presence of organisms or ferments, nor is there any mention of that characteristic symptom of the disease—recurring chills, or the still more characteristic variations of temperature, as shown by very frequently repeated thermometric observations. The names of these affections were upon the lips of nearly every citizen of the United States but a few months since; physicians were sorely pressed for information; we fear very few of our colleagues bred on English, and we might also venture to add American, text-books succeeded in shedding much light upon the subject.

The chapters on tumours were originally written by Sir James Paget, and in the second edition were revised by Mr. Moore. Dr. Longstreth has undertaken the difficult task of bringing the subject into a shape that will correspond with the prevailing views of the day. His additions are necessarily frequent and lengthy, but the difficult, and somewhat delicate, task has been most satisfactorily accomplished. His work has a special value, even to specialists in this department of science, giving the latest views on all debatable questions. There are one or two points on which we should disagree with the author, such as his inclination to ally keloid (a typical fibroma) with sarcomatous growths, but these are few and far between. It is especially interesting to compare the teachings of to-day with the views of so great a master as Sir James, with whose nomenclature and classification most surgeons near the meridian of life are still familiar. In these chapters, those who are still struggling to keep pace with the science of the day, have a peculiarly favourable opportunity to compare the new with the old, to identify many an old friend in his modern dress. The chapter on the microscopic structure of tumours is arranged with woodcuts in a manner particularly convenient for reference, and has been greatly improved by the addition of a number of illustrations by Dr. J. H. C. Simes.

The second half of the volume is chiefly devoted to regional injuries, and it is in this department that we find the great school of surgery for which England is famous, and to which the system owed its justly-earned reputation, appearing to the best advantage. Dr. Packard has appropriately selected the chapters on fractures and dislocations for his own personal revision. These comprise general remarks only on the subjects in question, the study of special injuries of this nature being deferred to the chapters on injuries of the extremities. We are glad to notice that the editor enters his protest against the custom of "developing" the existence of crepitus, a caution which books usually fail to dwell sufficiently upon, and for the lack of which much needless injury has been inflicted by zealous practitioners. For similar reason we cannot quite agree with the advice given further on in regard to the necessity of passive motion from an early period in the treatment of fractures. The remarks by Mr. Hornidge are excellent, particularly those which explain the causes of non-union. We do not find mention of silver sutures for these cases, except the statement that in compound fractures sutures are dangerous. The experience of hospital surgeons to-day would hardly support this view: they are excellent in compound fractures with great displacement, but we have sometimes felt that necrosis has been encouraged by their use, and the final healing of the wound delayed somewhat. Dr. Packard could have done well to allude to their use at least in ununited fractures.

The article on tetanus, by Mr. Poland, with additions by Dr. Jewell, is of the highest grade of excellence. The latter is disposed to regard the myelitis, with its destructive changes, as is shown in the plates which accompany the article, as an incident rather than an essence of the disease, which is an irritative lesion of a systemic character of the gray matter of the spinal axis, the exalted reflex excitability being due to a removal of inhibitory influences emanating from brain centres. In respect to etiology, we do not see it mentioned that the disease may appear simultaneously in a sufficient number of cases to suggest an epidemic character. Chloral seems to be his favourite remedy.

The chapter on delirium tremens, by Mr. Barclay, with notes by Dr. Bartholow, is a good companion piece.

The volume closes with the series of chapters on injuries of regions too well known by surgeons as standard references for us to dwell upon them at length. The rich materials stored up in the museums and records of the great London hospitals are here given to the world, and it will be many a long day before the precepts therein contained will become simply of historic value to the surgeon. The names of Hewitt, Pollock, Birkett, Flower, and others, are sufficient guarantees of the work they contain. Taking that on injuries of the back, by Alexander Shaw, we find an exemplification of the great clinical experience of these writers. That portion devoted to sprains of the back, the description of which is most satisfactory, is particularly rich in clinical illustrations. The author, however, does not escape the common fault of giving his cases too much in detail—a contrast to the neat French method of condensing such material into a graphic series of concise "*observations.*" The least satisfactory part of this chapter is that devoted to concussion, the author taking what to-day would generally be considered altogether too narrow a view of the subject. We fail to find mention by Dr. Hunter of valuable contributions to this subject by American authors, such as the articles on so-called concussion of the spine, by Dr. R. M. Hodges, or of the monograph of Dr. Ashhurst under fractures of the spine. It is curious to observe the apparent preference of the revisers for European authority, which is to be attributed in part to the very imperfect means, hitherto existing, of getting at the work of native writers owing to the peculiar character of our system of supporting periodical literature.

The publishers' work is highly creditable, and is in striking contrast to the style in vogue in this country when the system first appeared twenty years ago.

The double column, although not quite so comfortable to the eye, gives great compactness to the volumes, thus making them more convenient for reference, as does also the unusual luxury of an index for each volume and one also for the whole book. J. C. W.

ART. XXXIII.—*Supplement to Zeimssen's Cyclopædia of the Practice of Medicine.* Edited by GEORGE L. PEABODY, M.D., Instructor in Pathology and Practice of Medicine, College of Physicians and Surgeons, N. Y. 8vo. pp. 844. New York: William Wood & Co., 1881.

THE publication in Germany of a second edition of Ziemssen's Cyclopædia and the lapse of time since the appearance of the earlier volumes of the American translation of the work, have rendered necessary in the opinion of the publishers of the latter, the issuing of a supplemental volume in order "to remove from it the few traces of time that the last few years have produced." The preparation of this volume for the press has been committed to Dr. Peabody, who has been ably assisted in his work by a large corps of collaborators, twenty-eight in number. In the list of these will be found the names of several physicians who have distinguished themselves in different departments of medicine, as for instance, Drs. J. Lewis Smith, Robert E. Weir, and George M. Lefferts, of New York; Drs. Reginald H. Fitz, James J. Putnam, and Edward S. Wood, of Boston; Dr. J. Solis-Cohen, of Philadelphia, and Drs. James Nevins Hyde and Henry M. Lyman, of Chicago. In particularizing these gentlemen it is not our wish to be understood as thinking that their contributions are the only valuable ones or even that they are of superior excellence to those of some we have not mentioned by name.

It is difficult within the limits of a brief notice, such as the present, to give such a conception of the scope of the work as will enable our readers to form any idea of its value. "It has been the aim of the writers to give a concise account of the progress made in the various departments of medicine during the time that has elapsed since the several volumes of the Cyclopædia were published, each of the subjects treated being brought up to the date of the present volume." So that the volume, independent of its connection with the Cyclopædia, has a value in that it contains in a convenient form for reference, together with a full bibliography, an epitome of the recent advances in medical science. It would be impossible without overrunning the space at our command to allude to the subjects of the various contributors even by name. We shall therefore not attempt to criticize them in detail. Among the most important of them is one by Dr. Frederick C. Shattuck, of Boston, on *Diseases of the Lungs.* In the section on croupous pneumonia, this writer fully considers the theory that pneumonia is an infectious disease, which was advocated by Jürgensen in the article on this disease in the fifth volume of the Cyclopædia, and which is also held by Dr. Flint, but does not adopt it as applicable to all cases, since the conclusions he reaches he expresses as follows: "Pneumonia is often simply an inflammatory disease, but may depend on various miasmatic influences, and then presents decided variations in its course and symptoms." In the course of his paper he refers to several epidemics of pneumonia of a typhoid character, which evidently originated in defective hygienic conditions. One of these occurred among the prisoners in the jail at Frankfort, Kentucky, and is reported by Dr. Rodman in the number of this Journal for January, 1876. The occurrence of pneumonia cannot always be explained in this way, and we are not therefore prepared to adopt unqualifiedly the views on this subject of Drs. Jürgensen and Flint. Dr. Shattuck also discusses at some length the *Climatic Treatment of Phthisis*, and in the course of his remarks takes occasion to call attention to the importance in recommending any particular health resort of paying some attention to the personal peculiarities and preferences of the patient. This is a subject which is often overlooked by the physician to the disadvantage of the patient. It is certainly one which is not alluded to by many writers on phthisis, who recommend the Riviera or Davos, according to their individual preferences.

The arrangement as to bibliography, captions, paragraphs, etc., in this volume are essentially the same as in the original work. J. H. H.

ART. XXXIV.—*Comparative Embryology.* A Treatise by FRANCIS M. BALFOUR, LL.D., F.R.S., Fellow and Lecturer of Trinity College, Cambridge. In two volumes. 8vo. pp. xi. 492, xxii., xi. 655, xxii. London: Macmillan & Co., 1881.

THE vigour with which the study of Embryology has been pursued during the last few years, has led to the introduction of many conflicting statements and incomplete observations; to attempt to arrange these in anything like an orderly or systematic exposition has been no easy task. Mr. Balfour, however, who is well known as one of the authors of the best manual on Embryology with which we are acquainted, and of an elaborate monograph on the Elasmobranch fishes, as well as of numerous other valuable papers, has succeeded in bringing order out of chaos to a degree that is very satisfactory.

Vol. I., with the exception of three admirable chapters on the Ovum and Spermatozoon, the Maturation and Impregnation of the Ovum, and the Segmentation of the Ovum, is limited to a description of the development of the Invertebrata. In the second volume, the first eleven chapters deal with the developmental history of the chordata. These are followed by three comparative chapters completing the section of the work devoted to Systematic Embryology. The remainder of the treatise, from chapter XIV. onwards, is devoted to Organogeny, the history of the development of the organs of the chordata being treated, as the state of our knowledge necessitates, with much greater detail than that of the other groups of metazoa.

With the exception of a small, but useful, book by Packard on Comparative Embryology, Balfour's treatise is the sole work on this subject with which we are acquainted: in it the student will find, clearly arranged, all the results of the most modern research, enriched by Mr. Balfour's own valuable work, and subjected to his critical analysis. R. M. S.

ART. XXXV.—*Klinische Darstellung der Krankheiten des Auges, Zunächst der Binde-, Horn-, und Lederhaut, dann der Iris und des Ciliarkörpers.* Von Dr. FERD. RITTER VON ARLT, o. ö Prof. der Augenheilkunde in Wien. Wien. 1881.

Clinical Exposition of Diseases of the Eye—Conjunctiva, Cornea, Sclera, Iris, and Ciliary Body. By Dr. F. VON ARLT, Prof., etc. Vienna, 1881, p. 316.

THE welcome with which this volume will be received must be somewhat saddened by the thought that it is probably the last that will come to us from the hands of the great master. The fact that he has issued this fragment in advance is an evidence that he himself has had some such thought, and was not willing to leave a promise to his many pupils wholly unfulfilled. We can only express a fervent hope that Time, which seems to have dealt so kindly with him, may spare him to us yet long enough for the completion of the work begun so worthily, both for him and for the special branch of medicine he has done so much to advance. When we remember that Von Arlt was the teacher of Gräfe, and was a professor at the time Helmholtz invented the ophthalmoscope, it becomes apparent that he has lived and worked in an exceptionally fortunate period —one of such activity as will probably never occur again. The volume before us contains, in part, the results of the unusual experience of such a life. It is designed, he tells us in the preface, for the use principally of the general practitioner, but the experienced specialist will find much in it that will furnish food for reflection. The same qualities of close observation and careful study of the relations of symptoms, and particularly the etiology of each affection, which have won him renown as a clinical teacher, are made manifest here. Nothing is so apparently insignificant as not to receive careful attention, and that an affection is common seems to be to him the more reason for dwelling upon it in all its details of symptoms, etiology, diagnosis, and treatment. The fact which will strike one most forcibly in reading the book is, that it is wholly the outcome of the writer's experience. The views set forth are almost without exception his own, though the labours of others are by no means passed over in silence. It is just the difference between *writing* and *compiling* a book, and the former is what we look for from Prof. Arlt. The opinions enunciated are not in all cases those most generally accepted, but when they thus differ from the current belief, the grounds for the author's views are always set forth with distinctness.

The first 106 pages are given to a consideration of the diseases of the conjunctiva, and the first affection treated of is simple catarrhal inflammation. As is well known, one of the most distressing symptoms of this affection is the sensitiveness of the eyes to artificial light. Prof. Arlt thinks this is due to the *heat* which accompanies the rays of all artificial light. This is, we think, to say the least of it, highly problematical. Certainly the same amount of heat unattended with the light does not produce the same uncomfortable sensation. Under this head consideration is given to a peculiar form of eye trouble, of which we find no mention in the writings of American or English ophthalmic surgeons. It is the *Frühjarhskatarrh* of Sämisch. As it is by no means a rare affection, and has some very marked characteristics, we will be pardoned a more than passing allusion to it. Its chief characteristic is the presence of a circumcorneal elevation of a yellowish-gray colour—1 to 3 mm. in breadth, encroaching more or less on the surface of the cornea itself. Its thickness varies from $\frac{1}{2}$ to 1 mm. It occasionally occupies the whole extent of the limbus, but more frequently only a part of it; sometimes as almost circular elevated masses, but often having an extent of 5 to 10 mm. The conjunctiva of the ball is usually free from injection, while the conjunctiva of the lids is always infiltrated, and has a succulent look, and is studded with papillary elevations, sometimes very fine, but sometimes quite large and flat. In the negro I have observed a peculiar discoloration of the ocular conjunctiva occupying principally the palpebral opening. It is a dirty-brown, resulting from a deposit of pigment in the conjunctival tissue, and is deepest in colour at the base of the elevated masses. This has not heretofore been described, and as I have not seen it in the cases of the disease I have observed in the white race, I am disposed to regard it as peculiar to the negro. The symptoms of this affection are almost identical with those we find in severer cases of hyperæmia of the conjunctiva. There is no excessive pain, but whenever an attempt is made to use the eyes, there are more or less disageeable sensations, as itching, burning, etc., so that any continuous work is, as a rule, impossible. The lids may or may not be gummed on awakening in the morning, but almost without exception, at some time during the course of the affection, there arise all the symptoms of a catarrh of the conjunctiva. The other peculiarity of the affection is its recurrence at the appearance of warm weather. During the winter the symptoms subside, or, it may be, disappear, to make themselves manifest again in the spring—hence the name given it by Sämisch. It is likely to do this for a number of years—sometimes as many as eight or ten. As the name Spring Catarrh is in no way descriptive of the condition, and is to a certain extent incorrect—as it occurs in the summer months as well—we think the name *circumcorneal hypertrophy of the conjunctiva* a more appropriate one for it. As regards treatment, nothing yet suggested has seemed to exercise much influence on the course of the disease. Mild astringents, and protection of the eyes from glaring light by means of blue or gray glasses, seem to be the agents called for on the part of the eye itself. As there seems to be some similarity in the pathological appearances of this and psoriasis, the administration of arsenic appears called for. Wecker recommends the arsenite of soda in doses of 2 milligrams three times a day.

Under the division of *chronic blenorrhœa* he treats of *ophthalmia Ægyptica*, *militaris*, *contagiosa*, *granulosa*, or *trachomatosa*. He looks upon all these as simply forms of a chronic suppurative inflammation of the conjunctiva. In this opinion, we think it may be said, Prof. Arlt stands alone. So far as we know, no author or clinician of repute considers trachoma anything else than a specific disease. It is attended, it is true, by a conjunctivitis of greater or less severity, but in its course and results it differs in many important particulars from the blenorrhagic form of that disease. On the other hand, he considers the catarrhal and blenorrhagic forms of conjunctivitis as quite distinct. He has never observed a blenorrhœa of the conjunctiva begin as a catarrhal inflammation. In regard to the etiology of trachoma, he says: "I hold that the so-called granular lids is not a disease *sui generis*, but only a modified blenorrhœa, a disease which, originating from the transfer of the mucous secretion from the genitals to the eye, has, in its progress from eye to eye, and from individual to individual, lost some of its original virulency, but gained in persistency, and can again, under unfavourable external circumstances, reach its former degree of intensity" (p. 49). The proof which he offers in support of this is more circumstantial than direct, and cannot, in our opinion, be convincing to the majority of observers who have had much to do with this most intractable affection. It has been shown by several investigators—Nettleship among others—that in many eyes at the time, and for all time previously, free from any purulent or even mucous discharge, there were to be seen the trachoma granules, which needed but the application of some exciting cause—the contagium of a blenorrhœa or the like—to develop into true granular ophthalmia. The fact, too, that it attacks some races with great virulency—as the Irish—and spares others—as the negro—would tend to establish the existence of something like a dyscrasia as distinct from a common externally acting cause. The temptation to a further discussion of the question is great, but we forbear, because, practically, all are agreed that the discharge from a trachomatous eye—at least in its earlier stages and during the exacerbations—is infectious, and that patients should, if possible, be isolated; and where this is not practicable, great care should be exercised to prevent a further spread of the disease by contagion. In regard to treatment he has nothing new to offer. He recommends the usual astringent applications to be made, except where there is such a high degree of reaction as to call for the pure antiphlogistic agents. In the treatment of the pannus, which is one of the most unfortunate results of the affection, he confesses to a want of experience in the operation of peritony which some other surgeons have found so efficacious.

Under the head of *Conjunctivitis scrofulosa sive lymphatica*, he treats with great minuteness of detail one of the most common affections of the eye. By this name he designates all those affections which have usually been classed under the names of *C. pustulosa*, *phlyctenulosa*, *herpes*, etc., and which affect the epithelial layer of the cornea, as well as the conjunctiva. In fact, through the whole work we see a tendency to classify diseases not so much by their pathological conditions or according to anatomical divisions as by their supposed origins or causes. This form of nomenclature has its advantages when viewed from a therapeutical standpoint, and in these days of active pathological investigation is probably too much neglected. But in this particular instance Prof. Arlt claims that he has adhered to the anatomical division in so far as to consider the epithelial layer of the cornea a continuation of one layer of the conjunctiva, and in this form of disease it is the epithelium alone which is involved. In treatment, in addition to constitutional measures, he uses always some form of mercury as a local application—either in the form of dry calomel blown on the cornea or into the lower cul-de-sac—or Pagenstecher's ointment rubbed into the eye. When there are much pain and lachrymation, preference is given to an ointment of belladonna and ung. cinereum rubbed on the brow and around the eye, rather than to a solution of atropia dropped in the eye itself, since the great flow of tears will carry it away before it has had time to produce any effect.

We had noted several points under the head of *keratitis* for mention, but our allotted space is almost filled, and we can call attention to only a few additional ones. He makes a distinction between interstitial keratitis and keratitis *ex lue hereditaria*, though the only distinctive character of the latter is the demonstration of an existence of the specific taint. He does not look upon Hutchinson's teeth as a pathognomonic sign. He says there are many cases of congenital syphilis in which the peculiar notched incisors are not met with. He mentions keratitis from intermittent fever, though only a few cases have fallen under his observation. He does not note the clearly outlined ulcer near the centre of the cornea, which has been described by Kipp, of Newark, and which seems to be the most common form of the manifestation of malarial poisoning in the cornea.

We have no space left to notice the section devoted to the sclera, iris, and ciliary body; but they are as full of the same calm judgment, the same careful analysis of symptoms and accurate observations as regards cause, course, and treatment, as the others. Hardly a page can be read, even by a specialist of large experience, which will not be suggestive of ideas fraught with practical good. We sincerely hope it may be our good fortune to review in these columns the completion of this work so admirably begun.

S. M. B.

Art. XXXVI.—*A Practical Treatise on Impotence, Sterility, and allied Disorders of the Male Sexual Organs.* By Samuel W. Gross, A.M., M.D., Lecturer on Venereal and Genito-Urinary Diseases in Jefferson Medical College of Philadelphia, etc. 8vo. pp. 174. Philadelphia: Henry C. Lea's Son & Co., 1881.

The author in his preface states that his "aim has been to supply in a compact form practical and strictly scientific information especially adapted to the wants of the general practitioner in regard to a class of common and grave disorders." . . . And we may be permitted to congratulate him on the excellent manner in which he has compassed this end.

Whatever exceptions criticism may find to make, and these after all are on minor points, the fact remains that the book contains sound advice upon important subjects clearly, accurately, and pleasantly given. Indeed, this is apparent from the start in the statement boldly advanced, that in cases of unfruitful marriages the husband should also be examined, inasmuch as "he is, as a rule, at fault in at least one instance in every six," a point which has been almost overlooked by too many surgeons, but which, nevertheless, should be borne in mind.

The book is divided into four chapters headed Impotence, Sterility, Spermatorrhœa, Prostatorrhœa, and these again into sections for greater convenience. In the first of these chapters, in discussing the etiology of atonic impotence, the writer lays stress, and very properly too, upon its frequent association with strictures of the urethra either with or without a chronic inflammation of the prostatic urethra. The cause of these strictures being due to masturbation, although not a new idea, is one which has been comparatively lost sight of, and to which we are glad to see Dr. Gross call attention, although we incline to the belief that many of these strictures are spasmodic in their nature, due to the urethral irritation and not to any true pathological change in the canal itself induced by the habit.

The author classifies the atonic variety of impotence under the three heads of—

1st. Where the erection is imperfect and of short duration, and ejaculation is frequently too precipitate, but sexual desire remains, and intercourse is possible though incomplete.

2d. Where erection is so feeble that intromission is impossible, or it is entirely absent. As in the preceding form, desire is present.

3d. Where not only is there loss of power of erection, but desire is completely abolished.

The first cause is more common than all the other causes combined.

The treatment of these cases, besides the use of the proper means for the relief of the mechanical causes, depends upon the free administration of the bromide of potassium, with or without quinia, which has been found to decrease the depression produced by the bromides.

In the section on psychical impotence Dr. Gross scouts the idea that this variety is induced in newly married men from fear of being unable to consummate the sexual act or from mortification in failing to accomplish it. To such a view we frankly take exception, and certainly two of the three cases given by him as illustration seem to militate against his sweeping disbelief of such a doctrine.

The section on organic impotence is full, and opens with a description of the various malformations of the genital apparatus which give rise to this condition of affairs. Among the diseases of the testes which operate in this direction, the author says that "bilateral syphilitic orchitis generally involves impotence,"—a statement too sweeping to be strictly accurate—involves sterility, would have been nearer the mark.

The chapter on sterility is an excellent one, and the author emphasizes his statement, made in the preface, as to the frequency of unfruitful marriages being due to the male. Sterility is divided into azoöspermism, where no semen or unproductive semen is secreted; aspermatism, where the spermatic fluid is not emitted; and misemission, where fertile semen is not deposited in the upper portion of the vagina.

Under the section on the abnormal conditions of the semen, among the many causes enumerated, which may induce this condition of things, the excessive use of morphia is given, together with the history of two cases from Rosenthal.

One of the most frequent causes of aspermatism, according to our author, is stricture of the urethra, which seems now-a-days to be the cause for nearly all the ills that mortal (genito-urinary) flesh is heir to, but in addition to this a tight phimosis is also credited with its share in producing this diseased condition.

The treatment in such cases is of course the removal of the disturbing cause, be it stricture or phimosis, and afterwards a tonic treatment, such as quinia, iron, strychnia internally, and cold sitz-baths with galvanism externally. For aspermatism from disturbances of the brain, nothing can be done in the way of medication, says our author, as it is entirely emotional.

The third chapter is devoted to spermatorrhœa, which is classified under the three heads of nocturnal, diurnal, and continuous. For this latter kind the author suggests the name of spermorrhagia. The causes are numerous, the most common one being a functional derangement of the nervous system, oftentimes the result of congenital predisposition. Masturbation is assigned as a very fruitful cause of the disease, although the statistical proofs given are not convincing, the evidence going to show merely that the patients had at some time of their lives masturbated, and not that a large proportion of masturbators were afflicted with spermatorrhœa. Gonorrhœa, by the way, is given as the cause in three out of seventy-five cases, a *post hoc, ergo propter hoc* method of reasoning. Our old friends, urethral stricture and phimosis, again play an etiological part, together with herpes preputialis, a congenital narrowing of the meatus urinarius, and (in one instance) a polyp in the prostatic portion of the urethra, also epididymitis, piles, ascarides, fissures, pruritus, and the cauterization of internal hemorrhoids. Varicocele is one disease which our author excludes as playing a possible causative part.

The prognosis is good, indeed Dr. Gross states it "is far from being so unfavourable as many writers would lead one to believe."

The treatment, after all the possible mechanical causes have been removed, is by the internal use of sedatives and tonics. The one evidently preferred by the author is the bromide of potassium in thirty-grain doses, with ten drops of the fluid extract of gelsemium, every eight hours, and one-sixtieth of a grain of atropia sulphate on retiring.

Prostatorrhœa is the last subject discussed, and one noteworthy point made in a diagnostic view is the detection in the urine of delicate filiform shreds, "which are muco-purulent casts of the follicles and ducts of the prostate." F. R. S.

Art. XXXVII.—*History of Medicine in New Jersey, and of its Medical Men, from the Settlement of the Province to A.D.* 1800. By Stephen Wickes, A.M., M.D., Acting and Honorary Member of the Medical Society of New Jersey; Honorary Member of the New York State Medical Society, etc. 8vo. pp. 449. Newark, N. J.: Martin R. Davies & Co., 1879.

The work is divided into two parts. The first part contains a history of the progress of the practice of medicine and some of its methods in New Jersey from its first occupation by Europeans, in 1623, till 1800; and, including an appendix of 39 pages, covers 121 pages of the volume. The second part consists of 294 "Biographical Sketches of New Jersey Physicians to A. D. 1800," alphabetically arranged: chronologically grouped, they might have possessed higher value for reference in the estimation of certain lovers of medical history.

In the early period of the colonies, the practitioners of medicine were chiefly clergymen, many of whom, conjecturing that they might lose their positions as clergymen, studied medicine in England before they embarked for their new homes. In New Jersey, both clergymen and "doctors" found it expedient and necessary to supplement their meagre income from the practice of medicine by engaging in farming, trade, and other pursuits as opportunity offered. The salubrity of the climate was praised by the early settlers, but it is stated that the Swedes, in Gloucester County, suffered from a disease called by the English fever and ague, which was ascribed by some to "the peculiar qualities of the air," but by most, to putrid and stagnant water in the swamps and morasses. It was treated with Jesuits' bark, root of cornus florida, the bark of liriodendron tulipifera, brimstone and vinegar, and geum rivale (water avens), which was claimed to be as efficacious as the Jesuits' bark.

Under the zealous recommendation of Cotton Mather, the practice of inoculation was begun in Boston, Mass., in 1721, whence it spread through the colonies. The first contribution to medical literature from New Jersey was by the Rev. Jonathan Dickinson, a practitioner of medicine at Elizabethtown, who published an account of the "Throat Distemper" in *Zenger's Weekly Journal*, Feb. 16, 1735–6.

The New Jersey Medical Society, which was the first society of the kind in the colonies, was organized July 3, 1766. It established "a table of fees and rates," July 23, 1766, which is interesting to compare with modern charges for professional services.

In the appendix may be found a reprint of "Observations on that Terrible Disease vulgarly called the Throat Distemper, with Advices as to the Method of Cure, in a Letter to a Friend. By J. Dickinson, A.M. *Boston:* Printed and sold by S. Kneeland and T. Green, in Queen street over against the Prison 1740;" an extract from Salmon's Herbal, specimens of physicians' accounts, etc. etc.

We have found the volume interesting, and therefore commend it to the attention of those who find pleasure and instruction in the study of medical history generally, as well as to those who are interested in that of the beginning and progress of medical practice in New Jersey.

W. S. W. R.

ART. XXXVIII.—*Dysmenorrhœa, its Pathology and Treatment.* By HEYWOOD SMITH, M.A., M.D. Oxon., Physician to the Hospital for Women and to the British Lying-in Hospital. 12mo. pp. 122. London: J. & A. Churchill, 1881.

To the author of this little book dysmenorrhœa appears as a monster with multitudinous heads, which he spends his life in combating, and will continue to combat till he passes to "where the weary are at rest." From such a warrior, so earnest and untiring, we may expect much experience of value in our more desultory warfare.

"The weaker sex," he tells us, "is alone attacked by this malady, and it has no analogue in the male." Yet opinions may differ, and in the recent edition of Dr. Byford's "Surgical Treatment of the Diseases of Women" will be found a careful study of the analogies presented between certain troubles in the male and certain forms of nervous disease, including dysmenorrhœa, in the female, in which Dr. Byford certainly succeeds in tracing out a very strong resemblance.

The author rightly insists on considering dysmenorrhœa a symptom rather than a disease. He divides it broadly, according to its location and causes, into "ovarian,"—"tubal and from disease of the broad ligament," including under the last heading pelvic cellulitis, peritonitis, and hæmatocele—uterine dysmenorrhœa, and that arising from general disease.

The underlying ideas in the book seem to be that in the majority of cases the trouble originates in mental rather than physical causes; that repressed sexual instincts, disappointed affection, uncongenial surroundings, and worry, are the early factors in producing the pathological conditions upon which it finally depends. The question of "spaying," as might be expected, is fully discussed, and finds in him by no means a lukewarm advocate. He opposes the vaginal and urges the abdominal incision. For certain cases of ovarian neuralgia he also recommends clitoridectomy, though when we find him concluding by the remark that the subjects of the operation are not afterwards "devoid of proper sexual feelings," we are tempted to ask, as so many before us, "*Cui bono?*"

The author's chapter on Uterine Dysmenorrhœa gives us a full idea of his therapeutic resources; he is evidently a believer in uterine medication.

The various displacements are fully discussed. Ante-flexion is treated by dilatation with graduated sounds, "carefully making the turn and holding the uterus for a few minutes in the direction the reverse of its congenital curve." Ante-flexion pessaries he finds unsatisfactory; the stem pessary, preferably the stem and shield of Dr. Wynn Williams, has proved itself most successful in the author's hands, but he would never use it in a uterus tender or painful on the passage of the sound. Dr. Marion Sims's operation is also recommended. Retro-flexion, which causes "the most persistent dysmenorrhœa," the author often traces to too prolonged confinement "in the supine position after parturition." "It is dangerous to attack a case of retro-flexion by attempts at immediate reposition." Leeching, the use of glycerin plugs at night, perchloride of mercury internally, form the author's preliminary treatment; then, if there be no adhesions, the organ may be gently replaced every other day. As to pessaries, he favours the "simple Hodge pessary," or one "having its posterior aspect more bent upwards, its anterior more bent downwards." The author learned, after using this for some time, that Dr. Albert Smith, of Philadelphia, used a similar one, and he hints, by no means obscurely, that its real name should be the "Smith-Smith-Hodge," or the "Smith-Hodge-Smith" pessary.

Cervical stenosis is considered as a very rare factor in dysmenorrhœa, "except when associated with a flexion." When it exists, however, division followed by dilatation is the author's rule, rather than "tenting."

Spasmodic dysmenorrhœa, which commences before, and is relieved by, the menstrual flow, is diagnosed by passing a sound, which will produce severe spasmodic pain on reaching the inner os; for its relief hot sitz-baths and rapid dilatation are recommended. The chapter on Hysteria will add but little to our knowledge; for its cause the author "looks back of the uterus, back of the ovaries," to perversion of nutrition, and nervous overstrain.

Fibroids, fibro-polypi, fibro-cyst, areolar hyperplasia are considered as causes. The last condition is to be treated by local depletion and caustic potassa, applied to create an issue in the mucous membrane "until all the hardness has been removed," ergot being kept up meanwhile. In cancer of the cervix, where entire removal is not indicated, his own experience leads him to believe Chian turpentine "worthy of some more careful experiments" before it is consigned to the old property room with cundurango and its predecessors.

In membranous dysmenorrhœa we are advised to dilate the cervix with large sounds, cauterize freely the cavity of the uterus with solid nitrate of silver, nitric acid, strong carbolic acid, or carbolic acid with iodine. Should these means fail, "it may be advisable to pass a red-hot sound, or even a stick of potassa caustica;" and even after a cure "such cases are very liable to relapse."

The general diseases alluded to as causes of dysmenorrhœa are mentioned somewhat inelegantly as "rheumatism," "liver," "constipation," "spanæmia." Our author tells us that while the body of the uterus may be free from rheumatism, the cervix, "consisting as it does of contractile tissue interwoven with connective tissue," may suffer from "rheumatic infiltration." Constipation causes dysmenorrhœa "mechanically and constitutionally," the mass of impacted feces in the rectum "presses on the uterus, forcing the cervix upward and forward. The author's remedies for the relief of this condition consist in going to the closet at a regular hour—he does not say which is the best hour—or a glass of cold water on rising, or saline laxatives. A short but interesting chapter on vicarious menstruation closes the book, which is in many respects to be commended, though the reader will hardly be expected to agree with the author in all points. E. W. W.

ART. XXXIX.—*The Treatment of Variocele by Excision of Redundant Scrotum.* By M. H. HENRY, M.A., M.D., late Surgeon-in-Chief to the State Emigrants' Hospital, Ward's Island, New York, etc. 8vo. pp. 24. New York: J. H. Vail & Co., 1881.

THE author of this monograph practises and recommends, for the relief of varicocele, the plan originally proposed by Sir Astley Cooper, namely, the removal of a section of the anterior wall of the scrotum, corresponding to the semilunar patch removed from the eyelid for ectropium. His belief is, that, by the contraction of the scrotum, the relaxation of the walls of the bloodvessels is counteracted, and that permanent cures result from this method. But recently he has presented the argument for it—an almost literal reproduction of the little book we are noticing—before the Philadelphia Academy of Surgery, with the effect of inducing some of the best known surgeons of this city to employ it.

As has been remarked, the idea of removing a portion of the scrotum for the cure of varicocele is not at all novel; and the only original contribution of the author to this method is the invention of a pair of curved forceps which apply themselves nicely to the scrotum, very much as Ricord's forceps for circumcision are fitted to the prepuce. This, however, is a valuable contribution to the surgical armamentarium; and, as the method recommends itself to the judgment on theoretical grounds, and there is no reason to doubt that it has proved as successful in the hands of the author as he claims it to have been, it seems to deserve an extended trial. In the author's hands, nine out of fourteen cases secured union by the first intention, and "made perfect recoveries within a week." That certainly sounds better than the results when the veins are ligated. The operation is simple in the extreme, and the curved forceps of the author seem to deserve a wider employment than they have had in the ten years since he first described and recommended them.

So much for the object of this monograph. Of its literary merits there is little to be said. The author's statements in regard to the method of Mr. Henry Lee (on page 13), we imagine would amuse the latter surgeon. Of his fourteen "conclusions," most might better have been marked "opinions," since they have no basis in the remarks which precede them. Finally, it strikes us as in bad taste to have the last three pages of the book occupied with quotations of admiring notices of works "by the same author." C. W. D.

Art. XL.—*The Wilderness Cure.* By Marc Cook. Crown 8vo. pp. 153. New York: Wm. Wood & Co., 1881.

A great deal of attention has been given lately to the St. Regis region of the Adirondacks as a health resort for phthisical patients, dating from the publication of a paper on the curative properties of this climate by Dr. Alfred L. Loomis in the *Medical Record* in 1879. In *Harper's Magazine* for May of this year, the author of "The Wilderness Cure," a patient in an advanced stage of phthisis, narrates his experience in his search for health in this region, and where he appeared to have so much improved that he considered himself cured. His present book, he states in his preface, is in answer to innumerable inquiries as to details, and is consequently addressed to invalids intending to camp in the wilderness, and contains very full information on every point connected with the subject.

Although the author appeared to have greatly improved during his camp life, and to have materially retarded the progress of his disease, we have learned that since the publication of his book he has fallen a victim to the disease from which "The Wilderness Cure" had announced his recovery.

R. M. S.

Art. XLI.—*The Principles of Myodynamics.* By Jarvis Wight, M.D., Professor of Surgery, and Lecturer on Physical Science at the Long Island College Hospital. Small 8vo. pp. 162. New York: Bermingham & Co., 1881.

The work opens with the explanatory statement that "myodynamics treats of the forces of muscles and their effects." The author then proceeds to show that the mechanical principles of the lever, the inclined plane, the wheel and axle, and the parallelogram of forces are made use of in myodynamics. In the latter part of the book he further proceeds to apply the facts and principles demonstrated in the preliminary portion, to the various joints, thereby endeavouring to explain how the various muscles act so as to render the articulations stable or unstable, and the reasons why dislocations take place more readily in certain joint-positions than in others. As the major part of this treatise consists of a series of propositions, expressed in the most succinct manner, with the minimum of explanatory text, necessitating numerous illustrations to render the subject matter intelligible, it is clearly impossible, unless the review amounted to many more pages than the book itself, to give our readers such an analytical and critical review of the book as will enable them to judge for themselves as to the correctness of the criticisms which we may pass upon it. It is also impossible to select portions for analysis, since each, for accurate comprehension, is more or less dependent upon those preceding it.

After a most careful study of the book, we feel reluctantly compelled to limit our commendation to its "being a step in the right direction." The subject is made more abstruse by want of clearness and fulness in the explanatory text. The author aims at the highest science, yet has some of his cuts so carelessly executed that the letters in the text referring to essential points are not to be found on the diagrams. In his desire to apply theory, facts are strained too far or quietly ignored when likely to prove obstinate. The applied part of the treatise is full of grave anatomical errors. If Dr. Wight be correct, instructors hitherto have taught facts which were not facts, and annually sent out hundreds of young men with their minds filled with anatomical errors. In justification of our criticism we will merely give a few extracts. Thus the biceps brachii is said to be a *pronator*, which is an absolute mechanical impossibility; as our author correctly states in another place, it is a *supinator* of the forearm. Again, "the anterior crucial ligament runs from the inner and front side of the spine of the tibia upward, backward, and outward, to the inner and back part of the external femoral condyle, *and limits the in-rotation of the leg, and prevents displacement of the tibia backwards.*" This is an absurdity, since a ligament can only check a given movement when that *motion tends to separate its origin and insertion*, in other words, makes its fibres *tense;* while a displacement of the tibia *backward* would approach the origin and insertion of this ligament and *relax* it. In the same way the posterior crural is said to prevent *anterior* displacement of the tibia, while in reality it prevents *backward* luxation of the tibia. This is a fact easily proven by means of actual knee-joints.

C. B. N.

ART. XLII.—*Medical Societies: their Organization and the Nature of their Work.* By J. COLLINS WARREN, M.D., Fellow of the Massachusetts Medical Society, Honorary Fellow of the Philadelphia Academy of Surgery, etc. An address delivered at the Centennial Meeting of the Massachusetts Medical Society, June 8, 1881. 8vo. pp. 68. Cambridge, 1881.

THIS is a well-considered and ably prepared account of the organization and methods of medical societies, associations, etc. The common object of all being to protect the people against medical impostors and impositions of every sort, to maintain the public health, and incidentally to augment and improve medical education and increase medical knowledge, and thus serve the interests common to all honourable and competent members of the profession, a general review of the many plans which have been devised and pursued, at home and abroad, to attain the ends proposed, is very interesting and valuable. By comparing the different modes of different societies and their results, it is possible that alterations or corrections may be suggested and made in the organization of some that will be manifestly advantageous to their efficiency. Dr. Warren's work affords an easy means for each society to compare its own methods of proceeding with those of other societies, and is likely to invite inquiry into and study of medical society organization. For this labour, Dr. Warren is entitled to the approbation and thanks of the profession generally.

W. S. W. R.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

On Cortical Lesions of the Brain.

M. Coutz has recently presented to the *Académie des Sciences* and to the *Société de Biologie* several notes on the excitability of the brain and on the theory of cerebral localization, and has lately collected and extended these notes in a memoir on this subject published in the *Archives de Physiologie*, 1881, p. 488. The seventy-six experiments made in the Laboratory of the Museum of Rio Janeiro have given him exceptional opportunities for studying the results of cortical lesion and excitation.

M. Coutz is a determined opponent of the theory of localization. He holds that neither in monkeys nor in dogs is there any relation between the seat of the lesion and the symptoms observed. As, for instance, after lesion of the zone of Rolando, disturbances of sensibility were observed, although in general this region is regarded as purely motor in function. Likewise, after lesion of the occipital lobes, to which sensory functions are usually attributed, disturbances in co-ordination of movement and loss of motor power have been observed. In all cases where there has been a cortical lesion of moderate extent, the normal reflex movements are diminished on the opposite side. As, for example, the eyelids are not closed when the hand is passed rapidly in front of the eyes. The character of the convulsions is also extremely variable.

All these facts are very difficult to observe and to analyze, and this alone would explain the disagreements of many observers. The phenomena of sensibility are above all inconstant in their appearance, difficult to produce, and very difficult to analyze correctly. The functional alterations of the senses of taste, hearing, and smelling, which Ferrier and Munk have found after lesion of the sphenoidal or occipital convolutions, have not been observed by M. Coutz, who refuses to acknowledge any constant relation between their appearance and the seat of the lesion. Disturbances of vision and of the tactile sense, on the other hand, nearly always follow lesions of the fronto-parietal regions.

The general conclusion to which M. Coutz arrives is that the cortical regions of the brain so act on reflexes as to diminish or at least cause them to be less regular on the opposite side. The cortical apparatus may be regarded as bearing the same relationship to the medullo-spinal apparatus as the peripheral spinal system, and to the extent in which reflexes are possible, as in curare and chloral poisoning, excitation of the periphery of the brain produces movements which seem to confirm the analogy between reflex movements and those due to the cortical apparatus.

It is, then, according to the author, not necessary to discard the old views as to the inexcitability of the gray substance, while the theory of localization in the brain still remains to be proven. It has never yet been demonstrated, as the adoption of this theory requires, that there is a constant and invariable relation between the seat of the lesion and the character of the trouble produced. On this point, M. Coutz is completely in accord with M. Brown-Séquard, who believes that every lesion of the brain produces remote disturbances whose character depends upon the extent, and in no respect on the location, of the lesion, by acting by inhibition or excitation upon remote parts of the nervous system.

The differences of opinion between the most eminent physiologists teach us how much is still to be learned before we can speak with any degree of precision of the functions of cortical convolutions.—*Revue Scientifique*, Oct. 1, 1881.

Localization of Functions in the Human Cortex Cerebri.

A contribution on this subject was read by Dr. EXNER before the Vienna Medical Society, on May 13 (*Wien. Med. Woch.*, 1881, No. 21). From several thousand cases in medical literature, Exner had collected 168 of pure lesion of the cortex cerebri, in which there were good histories of the patients and of the *post-mortem* examinations. According to the necropsies, the seat of the disease was marked on plaster casts, with colors chosen to denote the morbid symptoms observed; thus facial paralysis was marked yellow, red denoted disturbance in the motor power of the upper extremity, etc. This collection was then methodically prepared. The negative cases were first investigated on diagrams showing the four principal views of the cerebral hemisphere; all those parts of the cortex which in all cases of the collection appeared injured, and by the lesion of which the function which was to be examined had not suffered, were marked down. In this way the cerebral surface was covered with drawings of cerebral lesions; that spot only remaining white which bore reference to the function in question.

By this method of percentages, Exner divided the cerebral surface into 380 arbitrary squares; each square was numbered, and then, in order to discover the importance of any portion of the brain for any function, it was determined: 1, In how many cases this square had been the seat of a disease; 2, In how many cases the disease of this square was contemporary with the interruption of the function under investigation. The results of this method were represented graphically, so that every square received a tint which corresponded to the percentage found. If lesion of a square, the functional disturbance which was to be examined, had taken place in all cases, this square was marked black; if only in one case, the square remained white.

The third method was to inquire which parts of the cerebral surface were diseased when a certain function appeared to be disturbed. This method is most of all subject to deception.

Exner now examined what parts of the cerebral cortex were altogether susceptible of lesion without functional disturbance, and found that this was the case chiefly with the frontal and the temporal lobes. Yet in this a remarkable difference between the two hemispheres was discovered. Since the right hemisphere provides for the left half of the body, and *vice versâ*, it was naturally expected that the cortical regions belonging to the right hand, which is much more expert than the left, would be more extensive. And, in fact, it was found that altogether the left hemisphere is much more cultivated with regard to motion than the right. In the left hemisphere the two central convolutions, and the whole of the parietal and occipital lobes, have proved to be localities which must not be injured if the lesion is to pass without disturbing motion and motor power, while in the right hemisphere the two central convolutions alone represent these exceptional places. Therefore, supposing a disease to be limited to one hemisphere, the probability of its course being latent may be represented in the right hemisphere by 3, and in the left by 2. The cortical field for the upper extremity in the right hemisphere is situated in the upper part of the two central convolutions and in the paracentral lobule, while that in the left hemisphere extends considerably further backwards. That part of the cortex which has in all cases produced the same symptom is marked by Exner as the absolute cortical field of the respective function, and that which only in certain cases produces the symptom he calls the relative cortical field. The cortical field for the upper extremity is very probably to be placed at a point in front of the fissure of Sylvius, in the lower part of which is to be sought the most intense portion of the cortical field, especially for the movements of the thumb. For the lower extremities, the portion of the cerebral cortex is smaller on the right hemisphere than on the left; and in the right hemisphere the main share falls to both central convolutions and to the paracentral lobule, while in the left hemisphere the corresponding cortical field extends as far backwards as the occipital lobe.

The relative cortical field of the lower extremity is just as large as that of the upper; although the absolute cortical field of the upper extremity is larger than that of the lower. The excess of extent which the cortical fields of the right hemisphere have over those of the left, is always found to be in a direction backwards, so that the cortical fields for the left extremities are much nearer the occipital lobe than those for the right, where they remain nearer the central convolutions. The cortical fields for the various functions varying in susceptibility of being affected, slight diseases will already have caused a disturbance in the region of the upper extremities before they reach the lower; there are slight lesions which cause complete paralysis of an upper extremity without greatly influencing the lower. This indicates that small lesions are not best adapted for the study of the localization of the functions of the cerebral cortex. With this corresponds the fact, that the absolute cortical fields are surrounded by a gray zone of the relative cortical fields, so that it appears probable that the power of any cortical portion which is of high importance for a certain function, will, as regards this function, decrease gradually in all directions. To prove this, Exner made an examination of one particular function, at the same time excluding from his percentage calculation all those lesions which encroached on the absolute cortical field; whereby it was found that even in this case there was a gradual decrease of power of the cortical field, from the absolute cortical field towards the circumference, in the direction of the limits of the cerebral convexity. Diseases seated in the absolute cortical field will always produce far more intense symptoms than those in the relative cortical field.

Exner then turns to the cortical field for the facial nerve. He says that, as a rule, all muscles which in ordinary life are innervated simultaneously, are represented together in the cerebral cortex, whether they be provided for by the same nerve or not. Since we are able to move the right extremity independently of the left, this is innervated by the left hemisphere only; yet we cannot innervate the external rectus of one side without also innervating the internal rectus of the other. These two muscles are provided with nerves by each of the hemispheres, therefore disease of both hemispheres will cause deviation of both eyes to one side. Our voluntary movements, as regards looking, do not intend a turning of both eyes to the right, but only purpose to catch sight of objects on our right side; and therefore we turn the head together with the eye; and hence the muscles of the neck, together with those that turn with the eye to the right, are represented together in the corresponding part of the brain. Deviation of both eyes and of the head to one side is very frequent in lesions of one hemisphere. If it were merely accidental that, when both eyes deviate, the head also deviates to the same side, the calculus of probability would show that no fewer than 20,000 cases would be required to produce that number of deviations of the eye and the head together, which Exner has found in his collection of 168 cases.

As regards speech, Exner remarks that there is no absolute cortical field. The seat of word-deafness must be placed in the second temporal convolution. Amnestic and atactic aphasia is confined chiefly to the second frontal convolution. The centre of speech is situated in the left hemisphere only, that one which is the more cultivated in regard to motion. It is but natural that the movements of articulation should be directed by one hemisphere only. Speech would be considerably disturbed if, for instance, in pronouncing the letter "j" (English "y" in "you") one corner of the mouth should be raised one-tenth of a second later than the other.

Exner then speaks of the cortical fields for the sense of sight, and of those for the tactile sensations, and finally remarks that he considers it of puerile conception, to imagine a single small portion of the body to have no other destination than to serve, as it were, as a handle for the soul in order to innervate a certain group of muscles. It is plain that the conditions at the cerebral cortex are much more complicated, and the corresponding cerebral portion where fibres enter certainly serves for a good many other purposes besides innervation.—*London Med. Record*, Oct. 15, 1881.

A Centre for Colour-Vision.

The physiology of colour-vision has hitherto been studied mainly in reference to the peripheral organ. The functions of the organs of sense have necessarily to be ascertained with exactness before the central relations of those functions can be investigated. The subject of colour-vision is one in which experimental inquiry can give little help, and we have to rely on the slower progress of clinical and pathological investigation. It is rare to meet with clinical evidence at once so clear and conclusive in its physiological significance as that which has been lately published by Samelsohn, of Cologne, on the important subject of the cerebral perception of colours.

The phenomena of congenital colour-blindness suggest that the cerebral centre for colour-vision is distinct from that for the perception of light and visual space impressions, since the perception of colour may be absent when the two latter functions are unimpaired. Unless this explanation is adopted, we are driven to the assumption that the functions of the same centre are so dissociated that the absence of one does not interfere with the perfect development of the others—an hypothesis which presents perhaps the greater difficulties. If a separate centre for colour-vision exists it must be sought, according to the facts already ascertained by experiment, in the occipital lobe. The localization of this centre cannot be effected by experiment, but must be ascertained by pathological investigation, especially by the study of colour-vision, in cases of hemiopia which depend on a lesion, not of the optic tracts, but of one cerebral hemisphere. Are there cases in which such hemiopia is confined to colour-vision? Such cases would, it is evident, afford conclusive proof of the existence of a separate centre for colour-vision.

One such case has been met with by Samelsohn. Uncompleted as it unfortunately is by anatomical proof of the region affected, it is yet of undeniable importance. A man aged sixty-three complained of affection of sight, which followed an apoplectic seizure. Right-sided hemiplegia was present at first, but nine months afterwards had lessened to a trifling weakness in the arm and leg, without loss of sensibility. Examination of the eyes showed that the ophthalmoscopic appearances were normal, and the acuity of vision unimpaired, excepting trifling presbyopia; slight weakness of the right superior rectus existed, with corresponding diplopia above the horizontal plane. Since he complained of imperfect sight, even when the right eye was closed, the fields of vision were examined. On testing with a white object no defect could be discovered, even with a test object of very small size. When, however, coloured tests were substituted, there was found to be a typical left-sided hemiopia for all colours; the loss began exactly at the vertical middle line. In the right half of each field every colour was seen, even in the smallest area, well up to the periphery; in the left half no colour could be recognized, even in a large area, each appearing to be a dull gray. The same result was obtained on testing in the dark with lights tinted by passing through coloured glasses. Under treatment the paralysis of the superior rectus passed away; the paresis of the limbs and the affection of sight remained exactly the same. Four years later the patient died, after a fresh attack of apoplexy, but unfortunately no post-mortem examination could be secured.

Although no case equally clear has hitherto been recorded, facts pointing in the same direction have been observed by Treitel. The clinical evidence must thus be considered conclusive that there exists in the cerebral hemisphere a centre for colour-vision so independent of that for white light that it is capable of separate damage from acute lesion.—*Lancet*, Nov. 26, 1881.

Transplantation of the Medulla of Bone.

Prof. Bruns, of Tubingen, reports in the *Archiv für Klin. Chir.*, Band xxvi. Heft 3, the results of some experiments he has lately made on animals, with the object of determining whether portions of transplanted bone-marrow can give rise to the formation of deposits of true osseous structure. An osteogenetic function of marrow, though indicated by the existence of an internal as well as of an external mass of callus after fracture, has been denied by many pathologists, and especially by Lebert, who held that the internal callus is only a displaced portion of the callus formed by the periosteum. It has been held also by Maas and many others, that the marrow and medullary membrane can only absorb and never form bone. The only cases in which any bone-producing action on the part of marrow can be proved in the human subject, are pathological instances of intramedullary deposition of bone without fracture, and without any coexistent formations of bone externally. Werner, by administering phosphorus with food, succeeded, even in full-grown animals, in bringing about almost complete ossification of the medullary cavity of long bones; and similar results have been attained by Busch through injections of mercury in small quantity into the arteria nutritia. That this internal formation of new osseous tissue in a long bone may be due to the action of specific stimuli, as well as to that of irritating agents introduced from without, may be proved by specimens of so-called osteosclerosis, in which disease the whole of the medullary cavity is often occupied by a very hard ivory-like substance. In order to decide whether or not this proved osteogenetic action of marrow be of a strictly pathological character, and analogous to the rarely observed ossification of muscular and testicular structures, Dr. Bruns instituted an extensive series of experiments. It was proposed to settle this question in the same way that the bone-forming capability of periosteum had been proved, namely, by transplantation. Experiments of this kind had, however, been previously made, first by Ollier and Maas, who obtained but negative results, next by Goujon, and afterwards by Backow, both of whom seem to have had some success. In Bruns's first series of experiments, performed in sixty instances on rabbits and fowls, and in six instances on young dogs, and in which the marrow was always transferred from one animal to another, there was invariably failure. In a second series of experiments on nineteen animals, in each of which experiments the transplantation was made on one and the same animal, deposits of true bone were found in twelve instances. Professor Bruns states that the animals that are best suited for experiments of this kind are young dogs. A portion of the shaft of the femur or tibia is resected, and the marrow contained in this resected fragment is removed in an unbroken cylinder. Portions of this cylinder are then inserted into fresh wounds on the breast or back of the same animal, either into the subcutaneous fat or in a superficial part of the muscular layer. The wounds are then carefully closed by means of sutures. The following changes, it is stated, take place in each instance of successful transplantation. A diffuse swelling is at once formed, which speedily begins to diminish, and is replaced about the fourteenth day by a movable nodule, in which bony tissue already exists in scattered foci. By the twenty-fourth day, these foci have usually amalgamated into a single piece of bone. Microscopical examination proves that the nodule, in its early stage, is composed of osteoid tissue, cartilage, and newly formed osseous tissue, and that the fully developed hard mass consists of true bone.

These experiments, Professor Bruns asserts, prove that bone-marrow, completely separated from its connection with bone, and transplanted under the skin of the same animal, at a remote part of the body, may give rise to the formation of bone and cartilage. The swelling at the seat of transplantation ossifies in part directly, and in part by the conversion of cartilage and osteoid tissue into hard bone. The same process takes place in the formation of both the inner and the outer callus after fracture; and it may be assumed that bone is formed from the medulla in a way similar to that in which it is formed from the inner surface of the periosteum. It is held by Professor Bruns that in each instance the osteogenetic function is due to the same elements, namely, to osteo-blasts, which exist in the inner periosteal layer, and are scattered amongst the elements of bone-marrow, particularly in young animals. Professor Waldeyer, of Strasburg, who has examined these specimens, agrees in the view of the part played by the osteoblasts in the ossification of marrow, and is not disposed to admit any participation in this process of leucocytes of the marrow, wandering leucocytes from the blood, metamorphosed fat-cells, or newly formed spindle-shaped connective tissue-cells. *London Medical Record*, Oct. 15, 1881.

Dr. TH. KÖLLIKER (*Cbl. f. Chirurgie*, 1881, No. 37), attracted by the report of Bruns on the transplantation of marrow, has made some experiments in this direction. He employed half-grown rabbits for his experiments, all the transplantations being made upon one and the same animal. Unlike Bruns, Kölliker transferred marrow, not to the skin, but to the anterior chamber of the eye and to the abdominal cavity. Transplantation of marrow to the anterior chamber of the eye was accomplished in the following manner: The tibia of another animal was trephined, a cylinder of marrow removed, and this was thrust into the anterior chamber by means of a small instrument similar to the Dittel's *porte-remède*. For transplantation into the abdominal cavity exarticulation of the knee-joint was practised, and the entire cylinder of marrow from the diaphysis of the tibia was placed in the abdominal cavity. After several failures—

partly on account of defective procedure, partly on account of too brief time of observation—Kölliker succeeded in producing both cartilage- and bone-formation from the transplanted portions of marrow. Kölliker can therefore confirm Bruns's assertion that marrow entirely removed from its connection with bone, and, in the same animal, transplanted to a distant part of the body under the skin, forms cartilage and bone, adding thereto the anterior chamber of the eye and the abdomen.—*Philadelphia Medical Times*, Nov. 19, 1881.

Polyuria.

MM. R. Moutard-Martin and Charles Richet have contributed several facts on the artificial production of polyuria, relating particularly to the substances which, when introduced into the circulation, increase the elimination of water and of urea by the kidneys.

Their method of procedure is very simple: a canula is inserted in each ureter and the two connected by a T tube, from which the urine is allowed to fall, drop by drop. In a dog of medium size, about three drops will fall in each minute; when the number of drops reaches five or six in a minute, polyuria is evidently present. It is necessary to wait about an hour after the operation for the abdominal traumatism to pass off, when the secretion takes place in a perfectly regular manner.

Pure water, injected into the blood, instead of accelerating the secretion, retards it, and even in small quantities may cause almost an entire suspension of renal secretion. As, for example, in a dog of ten kilogrammes weight, 300 grammes of warm distilled water arrested the secretion, and an injection into a vein of even 50 grammes served to retard it. On the other hand, saccharine solutions enormously increased the elimination of urine. Even an injection of 10 grammes of sugar produced immediately both polyuria and glycosuria; the urine became limpid, transparent, and very light coloured; it contained very large quantities of sugar, but neither albumen nor blood, although after the injection of large quantities of water, both the latter are to be found. If the quantity of sugar injected is considerable, the polyuria becomes very strongly marked, the elimination of water reaching as high as forty times the normal amount.

Large doses of sugar also increased the amount of the other secretions, particularly that of the intestines, in which large quantities of sugar were also found. Water alone, on the other hand, in no instance increased the intestinal activity, whatever the quantity injected. These facts can evidently be attributed to the high osmosic properties of sugar. All the sugars have the same action; dextrine, however, passes with greater difficulty, but it is capable of passing off through the kidneys, and when injected into the circulation, causes polyuria.

All the substances which can pass into the urine, when injected into the blood, can cause polyuria, as instanced by chloride of sodium, urea, glycerine, and soluble phosphates. These substances cause diuresis, and the diuresis coincides with the elimination. When polyuria is due to alteration in the composition of the blood, it may be attributed to the presence in the blood of substances which the kidneys should eliminate, an elimination which cannot take place without an accompanying removal of fluid. The kidney then should be regarded as the regulator of the concentration of the blood, and polyuria as the result of a too great concentration of a dialysable substance in the blood, the different conditions of pressure and innervation being excepted.—*Revue Scientifique*, Oct. 1, 1881.

MATERIA MEDICA AND THERAPEUTICS.

A New Method of Administering Anæsthetics.

At the meeting of the *Académie des Sciences de Paris*, on November 14th, M. PAUL BERT presented a memoir on the safe proportions of anæsthetic agents when mixed with air, and on a new process of chloroformization.

When one adds to air, in increasing proportions, vapours or gases possessing anæsthetic properties, and causes an animal to breathe these successive mixtures, there arrives a moment when anæsthesia appears. If the proportion of the anæsthetic is then increased, the animal dies. The author designates by the term *zone maniable*, the interval between the anæsthetic and fatal dose.

In carefully determining the boundaries of this *zone maniable* with different anæsthetics (chloroform, ether, amylene, bromide, and chloride of ethylene), and on different animals (dogs, mice, sparrows), the author obtained the singular result that the fatal dose is precisely double that necessary to produce anæsthesia.

This *zone maniable* is singularly narrow, even the addition of a few drops more of the liquid can cause an active mixture to become fatal. This is especially true for chloroform. 8 grammes volatilized in 100 litres of air are not sufficient to anæsthetize a dog, while 20 grammes are fatal, a difference of 12 grammes. With ether there is considerably less danger, while the general proportions hold, the difference here between an active and mortal dose being 40 grammes. This is incontestably the cause of the relative innocuity of ether in surgical practice.

Nitrous oxide has a *zone maniable* which is more extended than that of either the carbides or chloro-carbides of hydrogen. For the latter it is in the proportion of 1 to 2; for the former it is as 1 to 3.

The author thinks that these new researches on the *zone maniable* should lead surgeons to attempt in their practice the applications of the same method. The instrument required is very simple, a zinc reservoir holding 200 to 300 litres would answer.—*Revue Scientifique*, Nov. 26, 1881.

The Use of Quebracho in Dyspnœa.

Dr. ANDREW H. SMITH, chairman of the Committee on Restoratives of the Therapeutical Society of New York, has submitted on behalf of the committee a report, founded on clinical data, on the use of quebracho in dyspnœa, which is published in the *New York Med. Journal and Obstet. Review* for September, 1881. Of the thirty-two cases covered by the report, eleven were of spasmodic asthma, with or without emphysema and bronchitis. Of these, in nine cases the dyspnœa was notably relieved. In two cases of asthma associated with bronchitis no benefit resulted. One patient with emphysema and bronchitis without asthma was relieved. One with bronchitis with obesity was not relieved. Two with mitral insufficiency were not relieved. One with mitral stenosis was not relieved. One with hypertrophy with dilatation was not relieved. In two cases of cardiac disease (form not stated) the dyspnœa was relieved. In one case of fatty heart there was slight relief. Two patients with dyspnœa depending upon Bright's disease, in one of whom pulmonary œdema was noted, were relieved. In one case of aortic aneurism the dyspnœa was relieved till near the close. In one case of tonsillitis the dyspnœa, partly nervous, was relieved. In one case of cancer of the lung dyspnœa was relieved. In two cases of pneumonia it was relieved. One patient with hysterical dyspnœa was relieved. In one case of catarrhal phthisis, second stage, the dyspnœa was relieved. In one case of catarrhal phthisis, third stage, it was not relieved. In one case of intermittent fever with old pleurisy, the patient being an opium-eater, the dyspnœa was increased. Thus, of the thirty-two cases of different diseases in which dyspnœa formed a prominent feature, this symptom was relieved to a greater or less extent in twenty-one; not relieved in ten; aggravated in one. In some instances the treatment was not pushed far enough to give a decisive result. It is possible that the nausea observed in some cases might have been avoided by the use of smaller doses, and perhaps a favourable result obtained. The fact that dyspnœa depending upon such a variety of causes may be relieved by quebracho points, says the writer, to the respiratory centre as the seat of its action. Apparently it blunts the sense of want of air, and thus mitigates the suffering from a deficient supply. But this action is not necessarily only palliative. Exaggerated respiratory efforts are often in themselves an evil, not only on account of the muscular effort expended, but from the aspiration of blood into the thoracic viscera, which results especially when the dyspnœa is caused by narrowing of the air-passages rather than by solidification or compression of the lung. Hence in many cases an agent which will moderate the violence of the respiratory movements will not only lessen the distress of the sufferer, but will increase the chances of his recovery. That quebracho will often very promptly fulfil this indication there seems to be no room to doubt, while as yet there is no evidence that it is liable to produce unfavourable after-effects. The extremely disagreeable taste of the medicine and its tendency to produce nausea are, however, serious drawbacks to its use by the mouth. As yet, we have no record of its employment by the rectum. If the active principle is isolated, so that it can be used hypodermically, a great advantage will have been obtained.

Action of Duboisia on the Circulation.

In a memoir on this subject in the current number of the *Journal of Anatomy and Physiology*, Dr. Gibson gives the result of some researches he has recently made. The conclusions to which he has arrived are: 1. That duboisa in quantities not exceeding 0.005 gramme raises the arterial blood pressure without materially affecting the pulse rate. 2. In quantities not exceeding 0.05 gramme it diminishes the blood pressure and lessens the pulse rate. 3. In quantities of 0.05 gramme and upwards it causes death, with the heart in a state of diastole. 4. Upon the heart itself duboisia has but little action, except in very large doses—*i. e.*, doses of more than 0.05 gramme—and it then causes arrest of the heart in diastole. 5. Duboisia stimulates the central inhibitory mechanism. 6. The alkaloid paralyzes the peripheral inhibitory apparatus. 7. Duboisia stimulates the central vaso-motor apparatus, and causes contraction of the arterioles in small doses; in large doses it lowers the activity of the central vaso-motor mechanism and dilates the arterioles. 8. Duboisia has no influence over the sympathetic nerve.—*Lancet*, Nov. 5, 1881.

The Hypodermic Injection of Mercurialized Peptone.

M. Martineau, in spite of the ill success which has so often attended the administration of hypodermic injections of mercury in union with albumin, has yet been led to make a further trial of them. He calls the injections which he uses, *mercuric peptone;* they consist of a salt formed by the union of one gram of bichloride of mercury with one grain of chemically pure peptone. This salt is dissolved in so much water as will make each cubic centimetre of the resulting solution contain four, six, eight, or ten milligrams of the corosive sublimate, according to the quantity of mercury which it is intended to introduce into the system. To accelerate the solution, and to prevent its too rapid action on the surrounding tissues, a sufficient quantity of sodium chloride, or, better still, of ammonium chloride, should be added. Seven hundred and sixteen hypodermic injections of this solution were made in the course of two months in patients suffering from secondary syphilis in various degrees of intensity. Apart from the efficacy of the remedy, M. Martineau recommends it on account of the exactitude with which the dose may be estimated, as well as from rapid and total absorption of mercurial preparations which are so frequently difficult to give by the mouth. No accident has as yet happened from its use, in the direction of abscesses, scars, or salivation. In a few cases a slight swelling has occurred at the point of puncture, but no inflammation has resulted.—*Practitioner*, Nov. 1881, from *Le Progrès Médical*, July 2, 1881.

Since the publication of the above note, M. Martineau has continued his observations, with the result of confirming in 3087 injections the results drawn from those already reported. Analysis of the urine showed the presence of mercury in the urine after the injection of five milligrams. For internal use he gives the following formula: Ammoniacal mercurialized peptone, 1 grm.; glycerine, 50 grm.; water, 200. Dose, about 5 myr.—*Bull. Gén. de Therapeutique*, Oct. 30, 1881.

Indications for the Administration of Digitalis.

Digitalis may be administered with advantage in acute febrile diseases, in hæmoptysis and other hemorrhages, and in cardiac affections. It is not very safe as an antipyretic, as there is always danger of sudden collapse. It is difficult, says Professor LEYDEN (*Deutsch. Med. Zeitsch.*, No. 23, 1881) to lay down definite rules for its administration in cardiac affections, as every case must be judged on its own merits. It is specially indicated in mitral and aortic disease when there is diminished arterial tension, with dyspnœa and scanty secretion of urine. In these cases it is best given in small doses, of from one-quarter to one-fifth of a gramme daily. Should these doses fail, it is quite an open question whether it is advisable to give more. In hypertrophy and dilatation of the left ventricle, with lung-mischief, digitalis is a very uncertain remedy. It is a feeble diuretic, and only succeeds when there is a feebly acting left ventricle. Digitalis is best given in the form of tincture or infusion. Probably the best substitute for digitalis is squill. It may be given in combination, or, better still, digitalis may be given first, with squill to follow.—*London Med. Record*, Oct. 15, 1881.

The Therapeutic Action of Chinolin.

R. v. JACKSCH has made a number of observations on the action of chinolin in increasing the spontaneous morning remission of temperature in typhoid fever, intermittent fever, tuberculosis, etc., and found that, when the chinolin was withheld, the morning remission was absent, or at least less marked than when the chinolin was given in the afternoon and evening before the observation. By administering the drug in the morning, he found that chinolin was able also to reduce the evening rise in temperature, but to a less degree than quinine. Chinolin does not exert any favourable influence on the duration of the disease, and frequently causes violent vomiting, so that in some cases its further administration was impossible. In two cases of intermittent fever, chinolin produced a cure after two days' use, while in a third case it seemed simply to postpone the attack and to diminish the cold stage, but produced a cure after a few days' use. The author uses doses of from fifteen to forty grains with citric acid and syrup.

DONATH has also made similar observations with analogous results on rabbits and fever cases, using two-tenths of a gramme doses hypodermically.—*Centralblatt f. d. Med. Wissen.*, No. 45, 1881.

Naphthol in Skin Diseases.

Prof. Kaposi, of Vienna, has recently experimented (*Wien. Med. Wochenschr.*, No. 22, 1881) with naphthol in the treatment of skin-diseases. The naphthol used is the β-naphthol of chemists, and was employed either in solution in diluted alcohol, or in ointments. This substance has a therapeutic value in skin-affections similar to that of tar, of which it is a product, but has the great advantage of being almost odourless and colourless when used in a thin layer; and it stains neither the skin nor the hair. An ointment of 10 to 15 per cent. was found efficacious in scabies; and, in the Vienna Hospital, the modified Wilkinson's ointment has been replaced by one for which the following formula has been given: ℞. Naphtholi 15; axung. 100; sapon. vir. 50; cret. alb. p. 10. The advantages claimed for this treatment are that the eczema provoked by the acarus is cured simultaneously with the destruction of the parasite. The simple naphthol ointment was found efficacious in psoriasis; and, as it does not stain the skin and hair, it is especially suitable for psoriasis of the scalp, face, and hands. In eczema, a two and a half per cent. solution in diluted alcohol was found useful in conditions in which tar would have been indicated, and its use in this disease requires similar caution. Professor Kaposi is continuing his experiments with this substance, which promises to be a useful addition to the means at our disposal in the treatment of diseases of the skin.—*British Med. Journ.*, Oct. 8, 1881.

Hydrobromic Acid.

Massini (*Correspondenzblatt für Schweizer Aerzte*, Sept. 1881) regards this drug as a valuable acquisition to our stock of remedies. While the indications for its exhibition are the same as those for the other preparations of bromine, such as bromide of potassium, monobromide of camphor, etc., it possesses the advantage over the latter of having a more pleasant taste and of being better borne by weak and sensitive stomachs. The remedy was administered to thirty-one individuals with the following results: in four cases—one of violent neuralgia and sleeplessness, associated with cardiac disease, one of insomnia in an insane person, and two of aggravated hypochondriasis—it was of no value; moderate relief was afforded in seven cases—hypochondria with palpitation of the heart, hysteria with the same complication, nervous hyperemesis, hysteria with insomnia, the same with congestions at the menopause, hysteria with intense vertigo, and anæmia in a youth suffering from violent headache upon the least exertion. The acid was productive of marked and sometimes lasting benefit in the remaining twenty cases, comprising examples of nervous palpitation of the heart, insomnia, cerebral congestion and dizziness, paroxysmal headache in an individual affected with multiple sclerosis, congestive toothache occurring during pregnancy, persistent hyperemesis, hysteria, and, finally, pollutions from onanism. The remedy is best given about fifteen minutes after meals, in doses of ten drops of the concentrated (twenty-five per cent.) solution, or twenty to thirty drops of the dilute (ten per cent.) solution, well diluted with sweetened water. No unpleasant after-effects were observed.—*Med. Record*, Nov. 12, 1881.

MEDICINE.

The Nature of Diphtheritic Contagium.

Prof. H. C. Wood recently read before the Academy of Natural Sciences of Philadelphia an abstract of some researches made with Dr. Formad, at the suggestion of the National Board of Health, as to the nature of the contagium of diphtheria, and, as the full account of the experiments will not appear until the publication of his memoir by the National Board, the authors ask that criticism be withheld until then. Their first experiments, made in 1880, by attempting to inoculate rabbits by inserting fragments of diphtheritic membrane under the skin, gave negative results, the animals dying from tuberculosis; insertion of the dipththeritic membrane, however, into the trachea frequently produced a severe tracheitis, attended by the formation of a false membrane identical in character with that formed in diphtheria. It was then next determined that other severe non-specific inflammations of the trachea were attended by the formation of pseudo-membrane, not differing from the membrane of diphtheria except that the micrococci were not so abundant; they therefore concluded that the production of false membrane is of itself no evidence of any specific action.

In examining cases dying from malignant diphtheria, the authors found that the blood in all instances was more or less full of micrococci, some free, others in zoogloea masses, others in the white corpuscles; they were also found in the internal organs, especially in the kidneys, where they formed numerous thrombi. Inoculations practised on animals with the material from these malignant cases were in all instances followed by a grayish exudation at the seat of inoculation, with much inflammation, and subsequently death. The blood also during life and after death contained micrococci similar to those found in the cases of diphtheria; they were also found in abundance in the internal organs. Studies made upon the blood in these experiments, and in the cases of malignant diphtheria, showed in both cases that the micrococci first attack the white corpuscles, in which they move with a vibrating motion. Under their influence the corpuscles lose their granular appearance, and finally become full of micrococci, which now are quiescent, and increase until the corpuscle bursts, and the contents escape as an irregular transparent mass full of micrococci, and form the so-called zoogloea masses. In the diphtheritic membrane the micrococci frequently exist in balls, which are merely leucocytes full of the plant. The bone-marrow of the animals was found full of leucocytes and cells containing micrococci.

. The authors concluded that the disease produced in animals by inoculation was diphtheria from the facts that the symptoms and post-mortem lesion were identical, and that the disease retained its contagious character.

In their efforts to determine whether the micrococci were the cause of diphtheria, following the method of Letzerich, the authors found that when the urine of diphtheria patients containing micrococci was filtered, and the dried filter-paper inserted under the skin, malignant diphtheria was produced, and, further, cultivated micrococci up to the second generation are capable of producing diphtheria inoculation. They therefore conclude that the essential poison of malignant diphtheria is found in the micrococci, which must be either the poison itself or the carriers or producers of the poison.

From their culture experiments the authors conclude that the only detectable difference between the micrococci found in ordinary sore-throat and diphtheria is in their reproductive activity, the former ceasing their reproduction at the third transplantation, while the latter grew rapidly up to the tenth generation; they are therefore the same organisms in different states.

The difference, therefore, between a simple angina and a malignant diphtheria, in both of which micrococci are present, is simply dependent upon the reproductive activity of the plant, and the malignancy is in direct proportion to that activity. This identity of the organisms is further established by the fact that, when a membrane from a malignant case of diphtheria is dried, it loses in malignancy of contagiousness in proportion as its micrococci lose in activity, so that a virulent membrane may become inert, its micrococci not only looking like those of an ordinary angina, but behaving like them.

We will await with interest the complete account of the author's interesting researches and the results promised from the investigations of the conditions outside of the body which favour the production of active micrococci, and the effects of agents in killing these organs.—*Philadelphia Medical Times*, Oct. 22, 1881.

Pilocarpine in Diphtheria.

Dr. Adolph Fasano, in a recent number of the *Giornale Internazionale delle Scienze Mediche*, offers some observations on the use of pilocarpine in diphtheria, a mode of treatment which has been said to be attended with the most favourable results. He quotes the reports of Dr. Guttman, who extols most highly the use of pilocarpine in this malady. Dr. Guttman administers it internally in solution in the form of hydrochlorate combined with pepsin, the dose varying according to the age of the patients. Dr. Fasano also quotes a case reported by Professor Cantani as having been treated successfully by pilocarpine alone. Professor Lepidi-Chioti, who has reported this case in all its particulars, describes two other cases of the same kind which were equally benefited. But it is stated that large doses may disturb the stomach and cause spasm and vomiting, and therefore it is necessary to be very careful in the mode of administering the drug. The anti-diphtheritic properties of pilocarpine are said to be due to the great salivation induced, by which means the detachment of the false membrane is much accelerated, and thus the course of the disease is shortened. Lepidi-Chioti also regards the sweating as a true depurative, eliminating a quantity of the virus circulating in the blood, in the same way as pyrogenic matters are expelled by the perspiration in fevers. The human skin is a true filter, and, as such, various products are eliminated by it from the system. The success of pilocarpine is therefore due, according to some authors, to the salivation detaching the false membrane, or, according to Lepidi-Chioti, to the copious perspiration. Dr. Fasano, in relating these views, adds his own testimony to the efficacy of pilocarpine in diphtheria, but proposes some questions as to the theoretical reasoning on which the treatment is founded; and he gives his opinion, in the first place, that the detachment of the false membrane, although an important element in the treatment, is by no means the only curative object to be attained. He asks, accordingly, to be informed as to the exact therapeutical value of the detachment of the false membrane, and whether it is certain that the diphtheritic virus, circulating in the blood and in many of the internal organs, is really eliminated with the sweat. Again, if it be admitted that it is eliminated, is it all eliminated? and has pilocarpine a local and general antiseptic action which enables it to destroy the products and the factors of the diphtheritic virus? If an explicit and experimental solution of these doubts should be afforded, then, Dr. Fasano thinks, it may be said that a great remedy has been discovered for diphtheria; and the easy administration of pilocarpine, its rapid action and its innocuous nature, are so many further recommendations for its use. In the mean time, he himself proposes to make further trials of the remedy, and recommends his colleagues to do the same, and if trustworthy results should confirm the observations of Lepidi-Chioti, Dr. Fasano, regarding the ultimate object, namely, the cure, will withdraw the doubts which he now entertains on the subject.—*Med. Times and Gazette*, Nov. 19, 1881.

Bacillus of Enteric Fever.

In the *Arch. für Exper. Path. und Pharm.*, Band xii. p. 234, Professor Klebs published some preliminary observations on this point, and he now (*Arch. für Exper. Path. und Pharm.*, Band xiii. Heft 5, 6) gives a full account of his observations and experiments. Professor Eberth has, meanwhile, published (Virchow's *Archiv*, Band lxxxi. p. 58) views in many points confirmatory of those of Professor Klebs.

Professor Klebs' results may be summarized as follows:—

1. The bacillus typhosus occurs constantly in the intestinal infiltrations of enteric patients, as also in those anatomical alterations considered secondary—in the mesenteric glands, for example, the larynx, the lungs, the pia mater, the kidneys. Professor Klebs considers that, in some epidemics, the lungs are by inhalation primarily affected, or that at least the disease in them runs parallel with that in the intestine. In such cases, there is œdema with collapse of lung, mostly in the posterior part of the lower lobe, not dependent on meteorism, because he finds it present when meteorism is entirely absent. Professor Klebs delineates a case of this nature.

2. The bacillus typhosus forms at the height of its development long undivided threads containing spores; but, in its earlier stages, it appears as short rods containing terminally placed spores. The thread-form is found in close mycelia in the tissues, and also in more simple parallel or spiral arrangement in the interior of bloodvessels. The bacillus differs from the organisms of ordinary putrefaction frequently found in the intestinal contents, first in its greater fineness and its appearing as rods and threads; secondly, in the fact that it penetrates the tissues, which the coarser varieties never do.

3. Where the bacillus typhosus collects, the cells of the tissue degenerate and disappear. Sometimes, however, the cells develop rapidly, overcoming the bacillus, and then the bacillus may spread by means of the bloodvessels and so reach the kidneys, pia mater, heart, and lungs, although these last may be primarily affected.

4. Micrococci are developed only in isolated cases, and are simply complications of the bacillary development, being associated with the septic process.

5. From experiments in which he injected subcutaneously in rabbits fluids containing the bacillus typhosus, cultivated with most painstaking precautions, Professor Klebs considers himself justified in the conclusion "that the bacillus typhosus, under favourable conditions, develops in the mucous membrane of rabbits into the same thread-mycelium as can pervade the whole mass of a typhoid infiltration, and fill the bloodvessels in the human intestine. The histological changes in the two cases correspond, and still further strengthen the conclusion that this organism is the essential cause of the typhoid process."

With regard to the treatment of enteric fever, Professor Klebs' views are naturally based on the results above enunciated. If enteric fever really depend on the development and migration of an organism, the therapeutic indication is to check the growth of this organism. At the present time, treatment in enteric fever is mainly directed towards a reduction of the temperature. While admitting that repeated cold baths to a certain extent accomplish this, he has found them utterly fail in certain epidemics, and he points out that the interesting cases published by Strube and Fraentzel (*Zeitschr. für Klin. Med.*, Band ii. Heft 2) of severe enteric fever without high temperature, show an exclusive attention to the temperature to be unjustifiable. Antimycotics, when used in the disease, have been regarded as antifebrile; but Immerman, from his favourable results with salicylic acid, recommends thorough disinfection of those probably infected. The statistics of three epidemics given by Jahn show a lower mortality and shorter average duration of the disease in that treated by salicylic acid or salicylate of soda (ʒj to ʒiss daily) than in the other two. Salicylic acid seems to exert no effect on typhoid pneumonia, from which the fatal cases died; but the delirum disappears rapidly, pointing to an accumulation of the remedy in the central nervous system. The fall in temperature is gradual, and at first it may even rise higher, but in that case there are marked remissions. As an antimycotic, Professor Klebs recommends benzoate of magnesia (ʒv daily), with inhalations of a five per cent. solution of benzoate of soda, with which he would combine cold compresses for the abdomen, and occasional cold baths.—*London Med. Record*, Oct. 15, 1881.

Generation of Malaria in Flower-pots.

Prof. TOMMASI-CRUDELI pointed out recently in the *Practitioner* (Nov. 1881) that the production of malaria is not necessarily connected with the presence of marshes, ponds, etc., or with the putrefaction of organic substances; that the production of malaria ceases when the air can no longer act directly on the malarial soil, and that a very moderate degree of humidity is sufficient to produce malaria. To these points he now adds that the production of malaria is suspended when the summer is cool, and excessively warm weather may produce malaria in regions not otherwise malarial. Hence the keeping of numbers of plants in heated and imperfectly aërated rooms may cause malarial infection, even in regions where malaria is unknown. Several instances of this nature have been spoken of in the north of Europe. Prof. Eichwald of St. Petersburg communicated to Prof. Tommasi-Crudeli the following case:—

A Russian lady, who usually enjoyed good health, and who lived in a perfectly salubrious locality, was attacked by an intermittent fever of a true malarial character. The febrile attacks yielded easily to moderate doses of quinine, but a relapse invariably took place when the invalid returned to her ordinary habits of life. These alternations of easy cures and of obstinate relapses continued for many months, during which time Prof. von Eichwald was unable to discover the cause of this singular affection. One day he was struck by this circumstance: the cure of the attacks was maintained as long as the invalid remained in the bedroom, while the relapses took place when she left that room, even when she did not leave the house. Now this lady, when not suffering from fever, passed the greater part of her time in a well-heated drawing-room, containing a considerable quantity of flower-pots. Prof. von. Eichwald had them all removed, and from that day the cure was assured and no more relapses occurred.

Etiology of Malarial Fever.

Under the auspices of the National Board of Health, Dr. G. M. STERNBERG, Surgeon U. S. A., has carried on a series of observations as to the etiology of malarial fevers, with a view of testing the accuracy of the statements of Klebs and Tommasi-Crudeli.

Dr. Sternberg found a great number of minute algæ, including bacteria of various forms, upon the surface of swamp-mud in the vicinity of New Orleans, and also in the gutters within the city limits.

It is evident that the pathogenic properties acquired by gelatine solutions and other organic liquids after inoculation with bacterial organisms are due, directly or indirectly, to the presence of these bacteria, for, if they are excluded, such fluids may be kept indefinitely without undergoing change, and are innocuous beneath the skin of a rabbit.

Some of the organisms found in swamp-mud, in gutter-water, and in human saliva are capable of multiplying within the body of a living rabbit, and the fluids and organs containing them (blood, serum from cellular tissue, spleen, etc.), possess virulent properties. In other words, an infectious disease is produced which may be transmitted from animal to animal by inoculation.

Among the organisms found upon the surface of swamp-mud, near New Orleans, and in the gutters within the city limits, are some which closely resemble and, perhaps, are identical with the *Bacillus malariæ* of Klebs and Tommasi-Crudeli; but there is no satisfactory evidence that these, or any other of the bacterial organisms found in such situations, when injected beneath the skin of a rabbit, give rise to a malarial fever corresponding with the ordinary paludal fevers to which man is subject.

The evidence upon which Klebs and Tommasi-Crudeli have based their claim of the discovery of a *Bacillus malariæ* cannot be accepted as sufficient; (*a*) because in their experiments and in the author's the temperature curve in the rabbits operated upon has in no case exhibited a marked and distinctive paroxysmal character; (*b*) because healthy rabbits sometimes exhibit diurnal variations of temperature (resulting apparently from changes in the external temperature), as marked as those shown in their charts; (*c*) because changes in the spleen such as they describe are not evidence of death from malarial fever; inasmuch as similar changes occur in spleens of rabbits dead from septicæmia; (*d*) because the presence of dark-coloured pigment in the spleen cannot be taken as evidence of death from malarial fever, inasmuch as this is frequently found in the spleen of septicæmic rabbits.

While, however, the evidence upon which Klebs and Tommasi-Crudeli have based their claims to a discovery is not satisfactory and their conclusions are shown not to be well founded, there is nothing in Dr. Sternberg's researches to indicate that the so-called *Bacillus malariæ*, or some other of the minute organisms associated with it, is not the active agent in the causation of malarial fevers in man. On the other hand, there are many circumstances in favour of the hypothesis that the etiology of these fevers is connected, directly or indirectly, with the presence of these organisms or their germs in the air and water of malarial localities.

The truth or falsity of this hypothesis can only be settled by extended experimental investigations, and while further experiments upon animals may lead to more definite results, it seems probable that the *experimentum crucis* must be made upon man himself.—*Supplement No.* 14, *Nat. Board of Health Bulletin.*

Peptonuria in Acute Articular Rheumatism.

In twelve cases of acute rheumatic arithritis, R. JACKSCH detected, by Hofmeister's simple process, peptone in the urine, both after, and, indeed, during, the disappearance of the joint affection. The quantity of peptone was proportioned to the number of joints affected and the rapidity with which the joint effusion, either with or without treatment, was absorbed.

With the disappearance of the effusion the peptonuria also ceases, to appear again, however, in the repetition of the attack. The peptonuria was independent of the temperature.

It can be concluded in these cases that the peptonuria here, as was proved by Hofmeister and Maixner to be the case in the absorption of purulent effusion, pneumonic infiltrations, etc., was derived from the decomposition of the pus-cells in the effusion.

In this connection the following case is of interest:—

In a woman, aged 27, who had from youth suffered from a dermoid ovarian cyst, there occurred a sudden increase in the size of the tumour, due, as percussion revealed, to the development of gas. The patient lost strength, became extremely constipated, and was troubled with constant vomiting. Then the tumour suddenly collapsed, and the urine, which had previously contained traces of albumen, but no peptone, now contained large quantities of peptone until death occurred two weeks later, with the symptoms of ileus. The autopsy revealed a dermoid cyst, which was adherent in several places to the intestine, and contained besides gas an extremely fetid purulent mass, with hairs, epithelial scales, and cholesterine. Similar masses were found in the peritoneal cavity, between the occluded intestinal coils and in the pelvis.

In this case the appearance of peptonuria was evidently connected with the bursting of the tumour, as made evident by the external signs of its collapse, the peptone being absorbed by the peritoneum from its decomposed purulent contents.—*Centralblatt f. d. Med. Wissenschaften*, Oct. 29, 1881.

Treatment of Erysipelas by the Salicylate of Soda.

MM. Bochefontaine and Hallopeau have shown that when compresses soaked in a neutral solution of salicylate of soda of the strength of 1–20, are placed on an articulation and covered with rubber cloth, the drug passes into the urine. The authors therefore thought that the drug so absorbed by the skin might produce a favourable action on erysipelatous inflammation: to determine whether their supposition was correct or not, in thirteen cases they applied compresses soaked in the solution, and frequently renewed, to the inflamed surfaces, with the internal administration of four grammes of the salicylate of soda; in three cases in a weak punch.

In almost all cases the temperature was decidedly reduced immediately after the commencement of the treatment with the salicylate; it can therefore be concluded that in this disease, as in typhoid fever, as much of the danger as depends upon the hyperpyrexia can be removed, or at least diminished, by the use of this drug. It also appeared that the duration of the disease was sensibly reduced, seldom reaching twelve days, the usual duration (Velpeau, Heyfelder, Zuelder), while in some instances the progress of the disease was suddenly checked. In only two cases the fever lasted to the tenth day, but in one of these cases the treatment was not commenced until the seventh day, and the other case was one of *wandering* erysipelas consequent upon adynamic pneumonia, and therefore one of greater severity. The accidents sometimes following the use of this drug in typhoid fever have not as yet been met with in the treatment of erysipelas; one of the patients was for a short time delirious, but no serious results followed, while another, an old man, attacked with purulent pleurisy after his erysipelas had disappeared, was very somnolent during the last two days. Nothing, however, proves that these accidents can be attributed to the salicylate of soda; it nevertheless appears prudent to cease the administration of the drug should head symptoms or dyspnœa occur. The authors believe that their observations show:—

1*st*. That salicylate of soda, employed in the manner indicated, reduces the temperature in erysipelas.

2*d*. That it often seems to reduce the duration of the disease.

3*d*. That it is not prudent to give the drug when head symptoms or dyspnœa are present.—*Journ. de Méd. de Paris*, Oct. 8, 1881.

Treatment of Hydrophobia.

In the *British Medical Journal* for Nov. 19th, there are a number of papers on, with reports of, cases of this rare disease. Dr. Joseph Ewart has a paper on its Pathology and Prevention, and cases are reported by Mr. James Fowler, Mr. John Ruxton, Mr. W. S. Savory, and by Mr. F. A. Southam.

From a comparison of the different plans of treatment followed in the seven cases reported by Mr. Southam, he gives the following indications:—

1. Chloral and opium; administered as sedatives, in order to quiet the nervous excitement, and thus modify and allay the spasms by the direct action of these drugs on the nervous centres.

2. Chloroform and curare; given with the view of arresting the spasms by the special action of these agents on the muscles themselves, the one acting centrally, the other peripherally, on the nervous system.

3. Tracheotomy; performed in order to prevent death from asphyxia through spasm of the glottis.

4. The hot-air bath; employed with the view of eliminating the poison from the blood by means of the skin.

Of the four drugs made use of in these cases, chloral, by its sedative action on the nervous system, appears to give the most beneficial results, by prolonging life, and also by temporarily allaying the spasms, and in this way alleviating the sufferings of the patient. In the two cases in which it was employed, life was prolonged in the one instance for twenty-eight, in the other for fifty-one, hours after active treatment was commenced; in the remaining five cases, on the other hand (which came under treatment at much the same stage in the disease), and in which other plans of treatment were adopted, the patient did not, in any instance, survive for more than sixteen hours; so that, even though the action of chloral as a curative agent may be *nil*, yet, if it is a means of prolonging life even only for a few hours, valuable time is gained for the employment and trial of other remedies. Its administration by subcutaneous injection is a ready and effective method of giving the drug; much more so than by enema, as in the latter case there is the risk of causing an irritable condition of the rectum, and thus interfering with the employment of nutrient enemata, the only means of supporting the patient's strength. In neither case did the prick of the needle set up any spasm, nor was the injection followed by any evidence of local inflammation, though it is impossible to say whether abscesses might not have formed at the seat of injection if the patient had survived.

With respect to the action of morphia, though given in grain-doses frequently repeated, no such marked relief was observed as in the case of chloral; and I should be inclined to regard this drug as a remedy of much inferior value, both as a means of affording relief and of prolonging life.

With regard to the employment of curare, if it is to be administered until its toxic action is produced by causing general muscular paralysis, a new element of danger is introduced into the case; to insure success, it is obvious that the general paralyzing action of the drug must be produced, a necessary result of which will be paralysis of the muscles of respiration tending to asphyxia, to say nothing of the risk of inducing sudden syncope from its more remote action on the heart. In the two cases in which it was employed (in the one instance after two injections of one-quarter grain each at an interval of three hours; in the other after a single injection of one-sixth of a grain), alarming symptoms of failure of the respiratory power suddenly appeared, while at the same time no relief was afforded to the spasms.

Chloroform as a curative agent is absolutely useless; but, as a means of producing a temporary and complete cessation of the convulsions, and as an auxiliary for introducing food into the stomach while the patient is under its influence, it is not without value. During its administration, there is an entire freedom from all spasm; but, in the three cases in which it was employed, the convulsions returned on its discontinuance with all their former force. In Case 7, in which narcosis by this means was sustained uninterruptedly for four hours, I have no doubt that the fatal termination was hastened. The objection to its use is, the severe spasm which is excited on first attempting to bring the patient under its influence. In Case 2, the convulsions were so violent, and such severe respiratory spasm was set up, that it was necessary to discontinue its use.

Tracheotomy has been advocated with the view of preventing death from sudden spasm of the glottis; but it will be found that, as a general rule, death does not take place from this cause, but rather from exhaustion and gradual failure of the heart's action, the patient sinking into a condition of complete coma, with abatement of all symptoms, respiration in many cases going on quietly and free from all spasm. In six of the preceding cases, this was the condition at the end; in one only, Case 5, was death due to spasm of the glottis. In Case 6, in which tracheotomy was performed, the presence of the tube in the trachea appeared to be a constant source of irritation, apparently causing the patient considerable distress.

With regard to the hot-air bath, which has been much lauded by writers as a cure for hydrophobia, and especially by M. Bouisson, who states that he not only cured himself, but also eighty patients who had been bitten by rabid animals, we must remember that rabies only develops itself in a small proportion of those bitten by animals suffering from this disease. In Case 3, in which this plan of treatment was adopted, and where the symptoms were very well developed, it very quickly afforded marked relief, all the spasms entirely ceasing, and the patient quietly dropping off to sleep. It did not, however, prevent a fatal issue; the patient dying, as has been described, from sudden spasm of the glottis, about two hours after it had been discontinued. Whether the result might have been different if it had been continued for a longer period, it is impossible to say; but I think that if any real benefit is to be derived from this plan of treatment, it should be employed at the very commencement of the disease, with the onset of the earliest premonitory symptoms. From Cases 6 and 7, in which it was also used, no inference as to its curative value could be drawn; for, in the one, the patient was completely anæsthetized; in the other, tracheotomy had been performed, and the irritation of the tube seemed to favour the production of spasm.

The Relations between Syphilis and Locomotor Ataxy.

The question whether syphilis should be looked upon as a frequent, or indeed the principal, cause of locomotor ataxy, has recently been much discussed, most of the French and English observers being strongly in favour of this view, while our German *confrères* have expressed the contrary opinion. Dr. JULIUS ALTHAUS has recently added his experience in the etiology of ataxy to the facts already published, and has with this view analyzed a thousand consecutive cases of nervous affections which have been under his care in private practice, with the object of discovering the part which syphilis has played in their causation. Amongst these thousand cases there were—206 of epilepsy; 101 of neurasthenia, or nervous exhaustion, without evidence of substantial lesions of the nervous system; 77 of hemiplegia owing to cerebral hemorrhage or softening; 51 of neuralgia; and 32 cases of ataxy with the fully developed symptoms; the remainder of the cases being such as hysteria, infantile paralysis, local paralysis, muscular atrophy, anæsthesia, chorea, tumour of the brain, impotency, paralysis agitans, torticollis, etc. In 29 out of the 32 cases of ataxy there was a syphilitic history; and in these 29, secondary symptoms had occurred in 28, while in one of them there had been a soft chancre and a bubo, but no secondaries.

These results are certainly startling, as they show a percentage of 90.6 in favour of the syphilitic origin of tabes dorsalis, which is higher than that found by Gowers (70) and Erb (67). They become even more striking on being compared with the percentages found for the other nervous affections, inasmuch as of 206 cases of epilepsy only 10, of 101 cases of neurasthenia only 12, of 77 cases of hemiplegia 5, and of 51 cases of neuralgia only 2 had been preceded by syphilis. The percentages are therefore as follows:—

Ataxy	was preceded	by syphilis	in	90.6	per cent.
Neurasthenia	“	“	“	11.8	“
Hemiplegia	“	“	“	6.2	“
Epilepsy	“	“	“	4.8	“
Neuralgia	“	“	“	3.9	“

There were 6 additional cases in which paralysis of the ocular muscles, shooting pains, and sexual debility rendered it probable that sclerosis was developing in the posterior columns of the cord, and in 4 of these there were syphilitic antecedents. These cases, however, were lost sight of before the symptoms had become unequivocal; and, as they all occurred some time before the loss of the patellar tendon-reflex was utilized for the diagnosis of this disease, the author thinks it better to exclude them. Yet it is a significant fact that in 4 out of these 6 doubtful cases syphilis should have previously occurred, giving a percentage of 66.6. If we were to add them to the fully developed cases, the percentage of the whole would amount to 86.8.

With regard to the interval which had elapsed between the first symptoms of syphilis and of tabes, it was found that the former had preceded the latter upwards of twenty years in 2 cases, between ten and twenty years in 7 cases, between two and ten years in 19 cases, and eighteen months in 1 case. Amongst the 3 cases in which there was no history of syphilis, the affection was attributed in one to an operation for piles, in another to an accident in a tram-car, and in a third to exposure to wet and cold. The age at which ataxy became developed was from twenty-one to forty-five, and all the patients were males. It is to this latter circumstance that Dr. Althaus attributes the higher percentage of syphilitic antecedents in his cases, as ataxy in women is generally not preceded by syphilis. In all his cases, one or another of the ordinary causes of ataxy, such as accidents, over-exertion, combined with the influence of wet and cold, and sexual or alcoholic excesses, were mentioned as having lead to the outbreak of the complaint.

An overwhelming numerical testimony is thus clearly exhibited in favour of the view that tabes is habitually preceded—it is not said produced—by syphilis. But the real question at issue is whether syphilis is the originator of ataxy, or merely an accidental concomitant of it. The length of time which had generally intervened between the outbreak of the two diseases does not speak against their standing in the relation of cause and effect. Sir Benjamin Brodie met with an accident while riding on horseback in 1834, dislocating his right shoulder, and he eventually died of cancer which had become developed in the same joint in September, 1862, which gives an interval of twenty-eight years between the injury and the consecutive disease. It would not be difficult to multiply such examples. Other considerations, however, serve to show that ataxy is a disease *per se*, which occurs without any syphilitic taint whatever, but which may, like so many other diseases, be imitated by syphilis under certain circumstances.

1st. Tabes has unquestionably existed in Europe long before the first appearance of syphilis in this quarter of the globe.

2d. Numerous cases of ataxy are on record, more especially as having occurred in women, where no syphilitic affection whatever had preceded it.

3d. Ataxy is not a common or inevitable consequence of syphilis, as, for instance, roseola or sore-throat, but only appears to become developed in the syphilitic, if they have the neurotic constitution, and of other causes, such as accidents, excesses, and the influence of wet and cold, etc., have also been active.

4th. Treatment by iodide of potassium, even if used perseveringly and in large doses, is only exceptionally useful, even in cases with a pronounced syphilitic history, while the exhibition of nitrate of silver, ergot, the continuous galvanic current, nerve-stretching, and general remedial measures which have the tendency to improve the condition of the central nervous system, but which have no influence on the syphilitic diathesis, are frequently productive of beneficial results.

5th. The same disease—sclerosis—occurs in the lateral columns of the spinal cord, more particularly in young women who have never been exposed to venereal infection.

6th. Syphilis may, however, imitate ataxy (to use an expression of Mr. Jonathan Hutchinson), just as it imitates iritis, lupus, rodent ulcer, and other diseases. Clinically the symptoms of syphilitic and non-syphilitic tabes appear to be identical. That ataxy should be so frequently associated with syphilis is probably owing—first, to the fact that syphilis, like masturbation and other excesses and irregularities, deteriorates the nutrition and power of resistance of the central nervous system; and second, and more particularly to the specific tendency of the syphilitic virus, to lead to low forms of local inflammation, which, when once established, are apt to spread in certain definite paths. Where this kind of inflammation attacks the posterior root zones of the spinal cord, it will produce the clinical aspect of locomotor ataxy, being aided in its development and further progress by the natural tendency of spinal disease to invade symmetrical and homologous anatomical and histological portions of the organ.—*Lancet*, Sept. 17, 1881.

The probability of a causal connection between syphilis and tabes dorsalis, insisted on by Althaus, Erb, and others, has received confirmatory proof in some statistics recently collected by Dr. VOIGT.

Of 43 cases of typical tabes in adult males observed by Dr. Voigt, 29—*i. e.*, 67 per cent.—had had primary syphilis, and had been specifically treated for it, 8 of them showing no secondary symptoms. Of the remaining 14 cases, only 9 gave definitely negative histories in the matter of syphilis. The percentage of syphilitic cases is lower than Professor Erb's, a fact which may partly depend on the smallness of the number on which it is calculated. Smaller though it is, however, it is much in excess of the proportion of syphilis among patients generally, which Professor Erb makes to be 23 per cent. As to causes of tabes other than syphilis, in 22 syphilitic cases, and 9 non-syphilitic, the patients were unable to state any cause whatever, while exposure and fatigue, the commonly alleged causes, were blamed by only two patients in each class. In no single case was sexual excess given as the cause of the disease, and it is to be noted that tabes occurs least often at that age when sexual excess is most common, and when the nervous system is least resistant. Comparison of the syphilitic and non-syphilitic cases naturally suggests itself, and this Dr. Voigt gives us, in respect to the following points: 1. Age of occurrence. In both classes the maximum is from thirty to fifty years. 2. First symptom occurring. In both classes the large majority of patients complained first of the tabetic "lightning pains." 3. Other symptoms. These are in the main precisely parallel, any slight differences being evidently dependent on the small number observed. Seeing, then, that on these points a detailed and careful comparison fails to bring out any distinction between syphilitic and non-syphilitic cases, such, for example, analogically as exists between the syphilides and the cutaneous diseases they imitate, it is manifest that, so far as these statistics can prove it, syphilis does not in tabes act as a specific disease-producing influence, but as a general influence disturbing perhaps the nutrition of the organism generally, or of the nervous system specially.

Is tabes a manifestation of syphilis in the ordinary sense of the term? Then, as practical physicians, we should expect a strong corroboration in the effect on it of specific anti-syphilitic treatment. Here, however, Dr. Voigt's results agree with those of other physicians. In four cases of recent tabes treated energetically with mercurial inunctions he saw no benefit whatever; in a few others there was a marked deterioration under the treatment; while in no single case was there the slightest improvement from the use either of mercury or iodide of potassium. Brine baths and galvanization produced improvement of certain definite tabetic symptoms in twenty-one syphilitic and eleven non-syphilitic patients, and here again the general result, as well as the detailed improvements, were precisely parallel in the two classes.

While, therefore, the statistics given point to a causal connection between syphilis and tabes dorsalis, it cannot be said that the question is more than *sub judice.—Med. Times and Gazette*, Nov. 19, 1881.

Case of Charcot's Joint Disease.

At a recent meeting of the Clinical Society of London (*British Medical Journal*, Oct. 22, 1881), Mr. C. B. KEETLEY read particulars respecting this case, and exhibited the patient. He was a shopkeeper, aged 34, married ten years, having three healthy children. Up to October, 1880, no other symptoms than the following had been noticed: (1) slight "weakness on the legs," of twelve years' duration, and attributed by the patient to the lameness occasionally produced by a "corn" beneath the right great toe; (2) pains in the muscles, described as rheumatic; (3) attacks of diarrhœa, occurring fortnightly for long periods at a time. But, in October, the "corn" ulcerated, and the corresponding great toe became greatly swollen. About a week afterwards, the hip, groin, and thigh of the same side (the right) swelled enormously, but were pale and comparatively free from pain; *i. e.*, such pain as did exist was not synchronous with the occurrence of the enormous swelling. A deep fluctuating point being opened towards the lower part of the front thigh, several ounces of synovia, or a synovial-like fluid, escaped. In two months the patient was able to stand again, and move the joint freely; but there was then discovered an inch and a half of shortening, a tendency to eversion, and a peculiar "scrunching" or crepitus on manipulating the hip in a certain manner. The joint was also somewhat loose. Apparently, the head of the femur had disappeared. From this time, for nine months, the limb steadily increased in usefulness; the power of spontaneously rotating it both inwards and outwards seemed also to return. But then the left hip was attacked exactly like the right, though not so acutely. This attack came on whilst the patient was being severely purged by two pills and two black draughts, prescribed by a chemist on a theory that the patient looked "bilious." While the swelling of the left hip was subsiding, after the manner of that on the right side a year before, severe pains attacked the front and inner side of the left thigh, and the left knee also, but passed away after some hours. At present, the patient had only occasional slight pains in the left thigh, but great numbness on the front aspect above the knee. He could already get about on crutches, and even stand without them. There was now evidence of the left hip having undergone anatomical changes like those of the right. The right great toe joints had been also deformed since the swelling thereof twelve months ago. The corn was represented by a thin red scab.

There were various symptoms of tabes dorsalis besides those above mentioned. These were loss of patellar tendon-reflex, of iris-reflex, of the power of standing with the heels together and the eyes shut, partial loss of sensation in the outer sides of both feet, perverted sensation in the right foot, slight deafness of the left ear, and (?) an ataxic gout disguised by the joint-affections. And, though there were no gastric crises, there were what might be termed "intestinal crises," viz., the above-mentioned periodical attacks of diarrhœa. In the case of each hip, the subsidence of the general swelling left a marked enlargement of the inguinal glands, which persisted some time. The internal treatment had been iodide of potassium with salicylate of soda, five grains of each, three times a day. Was it justifiable to try nerve-stretching in this case? There were some grounds for entertaining such an idea. In most of the cases, now not few in number, in which nerve-stretching had been done for the lightning pains, general as well as local, benefit had accrued, not only by way of lessening the pain, but also by diminishing, or even removing, the inco-ordination. And the same general improvement, as regarded the whole neurosis, had been observed in leprosy, when the pains of that disease had been treated by nerve-stretching. Done antiseptically, it was by no means a very serious proceeding. Moreover, to do nothing in such a case as this did not secure for the patient a very good prognosis. If the speaker had any evidence to show that nerve-stretching had checked the visible changes in the skin in leprosy, he would be still more inclined to try it. Could any of his hearers speak as to that point?

Dr. DYCE DUCKWORTH thought the cases of this disease must be much more common in France than in this country. Sir James Paget, at the recent International Medical Congress, stated that he had not seen such a case in any museum, nor any living example of the affection; and he was invited to ask Professor Charcot to describe the cases in question. Dr. Benjamin Ball first described the ulceration of the feet. As regarded the question of nerve-stretching as a mode of treatment, some good observers were opposed to it.

Dr. BUZZARD remarked that a similar ulceration of the toe had occurred in a case reported to the society by Dr. Greenhow ten or eleven years ago. The ulceration was due to a trophic change connected with disease of the nervous system. The diarrhœa of this case, consisting of three or four liquid motions a day for two or three days, had for years come on every fortnight or so. He also had heartburn; but there was no vomiting. He (Dr. Buzzard) had suggested an association of tabetic arthropathy, with the "gastric crises" mentioned by Charcot; he had seen the latter six times in nine cases of the former in his own practice. He thought the gastric crises were due to sclerosis of the posterior cornua of the spinal cord, continued up to the medulla oblongata, there influencing the vagus, and that possibly in that part of the nervous system was a centre which presided over joints. Such a centre would explain the relationship of acute rheumatism and heart-disease. The muscles in the neighbourhood of the affected joints exhibited only normal excitability. In this patient the periodical diarrhœa and heartburn might be taken as an equivalent of the gastric crises.

Dr. ALTHAUS considered the case a very rare one. The œdema present here from the commencement of the joint-affection was not usual. The early joint-swelling was generally hard, not œdematous. As regarded the union of gastric crises and joint-affections, the former he declared frequent, but the latter very rare; so that he did not think there was much connection between the two. As to the centre in the medulla oblongata supposed to preside over the joints, it was an ingenious supposition, but could not at present be proved. The pathology of the disease was mysterious, and it was difficult to see how the joint-affection came about. It had been suggested by Professor Volkmann that the joint-disease was due to injury received by ataxic patients. But he (Dr. Althaus) did not consider this correct, as it often occurred in the early stages of tabes, even when the ocular symptoms were the only ones that could be recognized. This patient had

had no injury to his joint. As regarded the operation of nerve-stretching, it might perhaps be done advantageously in certain advanced cases.

Mr. H. PAGE said that, until quite lately, the museum of the Royal College of Surgeons had contained no specimens of the joint-disease in tabes. But, at the International Medical Congress, Mr. Macnamara had exhibited two specimens of hip-disease in ataxy; and a patient in St. Mary's Hospital was walking along, when he suddenly felt his hip "give way," and the limb suddenly become three or four inches shorter than the other. He was subsequently discovered to have ataxy. Mr. Page had exhibited, at the Congress, a patient having large joints of the foot, the bones of which moved freely on one another, and the movement gave no pain. He had such sores on the feet as were found in these other cases, and he had called them "gathered corns." They were not very painful, and he was examined and found to have well-marked tabes dorsalis. Whilst under observation, the other foot had become enlarged at the tarsal and ankle-joints, and the bones were freely movable upon one another, as if the foot were a bag containing loose bones. He (Mr. Page) had kept that second foot at rest, as the first had been so treated, and had been cured. The patient had left the hospital with the foot in plaster-of-Paris bandage, and was much improved. He had never had pain in the parts affected; but had gastric and intestinal crises, and profuse hæmaturia, for which no surgical cause could be discovered. Physicians and surgeons must have their eyes open to look out for these patients. The patients often had as yet no ataxic symptoms; they could still walk with their eyes shut.

Mr. LISTER remarked on the rarity of the affection. He had seen one case of the kind under one of the surgeons at King's College Hospital. Perhaps it was the very rarity and abnormality of the cases which kept them out of museums.

Mr. KEETLEY, in reply, stated that a patient might have ocular and other symptoms for years before he became ataxic. This patient had not his knees affected. The joint-disease was liable to be bilaterally symmetrical. The disease was not likely to be mistaken for any other disorder. This man's hip and thigh were much more swollen after being affected for one week, without there being any pain, than were any other hip or thigh he had ever seen affected with any other disease, and yet in two months the swelling was nearly all gone, the limb was shortened; and all this had occurred with scarcely any pain. The disease certainly had most distinct features, and was easily recognizable.

Scorbutic Spinal Hemorrhage.

Dr. PETER EADE reports the case of a farmer's daughter, aged 13, who had been long ill, viz., for four or five months, with cough, expectoration, and subacute inflammatory symptoms in the chest; and who was then suffering from severe pain and constant spasmodic startings and jerkings of both her legs and thighs, with which she had been seized quite suddenly five days before.

At his visit, she was lying in bed upon her back with the shoulders raised, in a most constrained position, with the hand of a nurse firmly pressing upon both her thighs so as to keep them down and steady, and to prevent the constant painful jerkings of the limbs which immediately took place when this restraining force was removed.

This condition, we were told, had existed continuously for the preceding forty-eight hours, both through the nights and days; and, although she had been somewhat quieted by the opium, yet she begged, or almost insisted, upon the hands being never removed; and the nurses had, in fact, most unweariedly kept up their irksome and straining attentions, and had been kneeling by the bedside, doing this, for all this time.

She was noticed to be very pale and thin, though mentally clear and bright; and, on inquiry, it appeared that her history was bad, she having lost several near relatives from consumption; also that, ever since the age of one year, she had herself suffered from otorrhœa and partial deafness, and that, for the last four months, she had been suffering from lung disease, consisting of subacute pleuropneumonia, terminating in abscess at the base of the left lung. On examination, dulness, feeble breathing, and large moist sounds were found to be still present at the left base. The heart's sounds, though free from *bruit*, were also heard over a large portion of the left side.

On further examination her pulse was found to be small, weak, and quick, and her temperature to be 100° Fahr. The urine was free from albumen. There was also entire freedom from pain along the spine, as well as in the limbs when the spasmodic startings were restrained. And it was found that sensation in the legs was unaffected, and that no spasmodic jerkings were produced by merely touching the skin, although the spasms immediately recommenced directly the pressure of the nurse's hands was removed from the thighs.

Taking into consideration the febrile temperature, the strumous history, the recent and still existing thoracic disease, the most feasible diagnosis now appeared to be that of some form of scrofulous disease, affecting the spinal cord and its membranes, either directly, or by propagation from the diseased chest; but, on still further inquiry, it appeared that, for the preceding two or three weeks, she had had recurring small hemorrhages under the skin of the legs, and it was also elicited that she was of a very peculiar nature and habits, that she had a great dislike to vegetables and fruit—indeed, was scarcely ever known to eat any, except on the most rare occasions—and that her habitual diet consisted of meat, or beef-tea, and bread.

Taking these additional facts into consideration, even although there was an absence of sponginess of the gums or other hemorrhagic conditions, Dr. Eade finally arrived at the opinion that she was really suffering from scurvy, that there had been a scorbutic hemorrhage into the membranes of the lower part of the spinal cord, that the paralysis and spasm—the spastic paralysis—was due to this, and possibly that much of her generally diseased condition might also be due to the depraved condition of her blood.

Acting upon these views, he decided at once to put her upon small and frequently repeated doses of lemon-juice, and to give her in addition nothing but a few drops of tincture of belladonna, or some opium, if the restlessness required it. The result was most satisfactory. The symptoms, after four or five days, began slowly to amend. The startings gradually subsided; the hemorrhages did not recur; and soon she began to regain some power of movement in the legs, and in due time to be removed from her bed; and, on September 30th, she could stand and walk.

It will thus be seen that the progress of this case, under merely antiscorbutic diet, exceeded the most hopeful anticipations. At the visit on August 9th, the prospect appeared most gloomy, and the prognosis given was most grave; but the girl was, at the end of six or seven weeks, up, and walking about with the aid of sticks or the arm of a friend, and was very greatly improved in health and general appearance. The lemon-juice was continued up to the end of September, and it may be said most distinctly that, within a very few days of its commencement, the improvement had commenced, and was going on.—*Brit. Med. Journal*, Nov. 19, 1881.

The Pathology and Treatment of Certain Forms of Neuralgia.

An elaborate article on this subject, by Dr. C. LANGE, of Copenhagen, has been published in the *Hospitals-Tidende*, Series 2, Band vii. pp. 701, 721, 781, 801, 821, and 849.

In several cases of sciatica, where the patient could not submit to a long course of treatment, Dr. Lange had recourse to an old remedy—cauterization of the helix of the ear, by means of Vienna paste, with strikingly good result. Eight cases in which this treatment was employed are related. In a case of reflex sciatica (from renal calculus), in one of recent peripheral sciatica, and in a very old case, the treatment was without essential influence, with, perhaps, the exception in one case of some temporary alleviation; in the other five cases, very remarkable relief from pain was at once obtained, and continued as long as the control could be maintained, until the case ended, in the course of a short time, in complete or nearly complete cure. The author admits that this treatment is attended with the disadvantage of leaving the ear deformed by scars.

Dr. Lange remarks that neuralgia in the region of the supra-orbital nerve presents a number of peculiarities which are generally not rightly estimated. Thus it presents an usually perfectly regular intermittent type. This is generally attributed to an assumed connection with malarious infection, which, however, the author believes to be by no means the rule, and certainly has not been the case in his experience. Another peculiarity is the tendency of the affection to periodicity. It is very common to see it appear for two weeks or longer, and then cease, returning after the course of several months. Sometimes it appears at certain times of the year. Moreover, the pain appears in many cases on both sides, either being first confined to one side, and then, after the course of some time, being felt in a slighter degree on the other; or commencing on both sides, and afterwards being limited to one; or, finally, affecting first one side and then the other. It attacks by preference young individuals; but the author has never seen a case under twelve years of age. The prognosis appears to be good, and the action of galvanism (the constant current, the anode being placed over the supra-orbital nerve) is well marked.

Regarding the diagnosis of tabes dorsalis in an early stage, Dr. Lange makes some remarks founded on a considerable number of cases, several of which are related. He gives first a case in which the initial pains were absent; this, however, he regards as being very rare. He next remarks that they by no means always commence in the legs. In the first case related in illustration of this fact, the pains began in the thorax, and afterwards affected the upper limbs; after this, there were anæsthesia of the chest and dysæsthesia of the hands; in the lower limbs, pains and anæsthesia did not appear until later. In the next case, the patient had for many years only pain in the chest, of a rather vague nature, and not presenting the character of intercostal neuralgia. In another case, there were at first constricting pains about the chest; then followed anæsthesia of the body and upper limbs, and ataxy of the arms; and, later on, pains and ataxy of the lower limbs. In another case, pain and dysæsthesia, and afterwards ataxy, occurred in the arms before the phenomena of the disease were met with in the legs.

Another circumstance which may cause difficulty in making the diagnosis of tabes in the earlier stages is the limitation of the symptoms to one side for some time. This also may be regarded as a rare occurrence; but that it may occur is sufficiently proved by a case related. In this case, the morbid phenomena first appeared in the trunk. Dr. Lange also relates several cases of rapid, truly acute tabes, not, as is usually the case with the cases described as acute, preceded by a premonitory stage. In one case, the disease appeared after exposure to cold and damp (there was, however, a history of syphilis); in another, the patient was attacked during convalescence from an acute illness. Dr. Lange ascribes no small diagnostic importance to the absence of the knee-phenomenon. He relates, however, a case in which it was abnormally strong. He has had about eighty cases, of which four have been quite cured.—*London Med. Record*, Nov. 15, 1881.

Cardiac Symptoms of Chorea.

Dr. O. STURGES (*Brain*, July, 1881) summarizes the several factors of the heart symptoms thus: 1. In the course of the chorea of childhood the heart's action is apt to become irregular or uneven, and its first sound to be followed by apex-murmur, which is variable in pitch, influenced by posture, seldom audible in the axilla or at the angle of the scapula, and which disappears along with, or shortly after, the chorea, the heart and the circulation suffering no injury. 2. This liability on the part of the heart to what, from its signs, would seem to be a functional disturbance, is independent of the violence or method of the chorea, but dependent upon the age of the patient, the younger children being the most, and the elder the least, liable, while beyond childhood there is little, if any, liability of the kind. 3. These heart-signs of chorea—acute rheumatism being excluded—give rise, as a general rule, to no symptoms whatever affecting the health or comfort of the child. They make no apparent difference to the prospects of recovery, or to the structural integrity of the heart. Nevertheless, choreic children having this murmur, and happening to die, either with or shortly after recovery from chorea, very commonly exhibit a beading of recent lymph on the mitral valve. Such, he says, are the chief statements which statistics seem to warrant. To these he adds another, which, so far as he knows, has never been statistically reckoned, but which no one will gainsay. It is, indeed, the most constant of all the heart symptoms of chorea, and met with at a later age than the rest. He refers to the acceleration of the heart and pulse.—*London Med. Record*, Oct. 15, 1881.

Paralysis of Hands and Feet from Disease of Nerves.

In a paper read before the Medico-Chirurgical Society of Edinburgh, on March 2, 1881, Dr. GRAINGER STEWART has called attention to a form of paralysis, of which hitherto little has been known. He describes three cases of what he named peripheral paralysis; and, in one instance, he was enabled to verify his diagnosis by *post-mortem* examination.

In his own words, the clinical characters of this disease are "the co-existence of symptoms referable to the sensory, the motor, and the trophic functions of the nerves; the localization of the symptoms in the feet and hands, the intensity being greatest at the most distal points, and the affection corresponding to certain districts of the extremities, and not to the distribution-areas of particular nerves." He remarks that such symptoms cannot be referred to disease, either of the brain or of the spinal cord; and hence he infers, by a process of exclusion, that the nerves themselves are involved. In the fatal case, the median, ulnar, and tibial nerves were particularly affected. Microscopically, it was found that certain bundles of nerve-fibres had undergone what appeared to be fatty degeneration. The axis-cylinder was swollen, and presented a number of rounded masses resembling colloid bodies in every respect. In some instances, these bodies had undergone fatty degeneration, and the result was the formation of compound granular corpuscles. Some of the nerve-fibres were completely destroyed, and were replaced simply by fibrous tissue. Secondary degeneration of the columns of Goll and of the direct cerebellar tracts was observed in the cord. Dr. Grainger

Stewart thinks that the change could not possibly have arisen in the muscles, since the sensory disorders preceded the motor. Unfortunately, he is unable to give any precise information regarding the nerve-endings, but he strongly inclines to the belief that the disease originated there, and spread upwards. From the fact that the disease begins simultaneously, or nearly so, in both hands and feet, it seems probable that the affection depends on some constitutional cause.

After noticing the few cases of this disease on record, Dr. Stewart proceeds to give a summary of its clinical features. The commencement is usually acute, and attended by more or less pyrexia. The first changes occur in the sensory functions. Sometimes there is acute pain, but more frequently numbness or tingling in the affected parts, and, at the same time, more or less anæsthesia. These sensory disorders occur usually in both hands and feet simultaneously. Paresis affects the most distal parts at first, and then extends up the limb from one group of muscles to another. In rare cases, the normal functions of the bladder and rectum are interfered with. The skin-reflexes are sometimes absent, but are present to an exaggerated extent on the application of a strong stimulus. The patellar reflex is usually lost at an early stage, but ankle-clonus may be present even when the "knee-jerk" is absent. Voluntary motion rapidly diminishes, the patient at the end of a week often being unable to flex or extend the toes and fingers. There is no marked loss of co-ordinating power. Trophic changes are indicated by the rapid muscular atrophy, by congestion and glossiness of skin, by malnutrition of the nails, and by some degree of œdema. The progress of the disease is towards recovery, but there is a marked tendency to recurrence. It is probable that many cases which were formerly ascribed to spinal congestion and myelitis, are really dependent on a similar change to the one now described. This disease resembles Landry's acute ascending paralysis; but in this latter affection the motor functions only are involved and no marked pathological change has been noted. It may be, however, that these processes are related.

Dr. Grainger Stewart suggests that the premonitory, but transitory, attacks of paralysis, involving certain nerves in locomotor ataxy, may be explained by assuming them to be due to peripheral disease. Dr. Hamilton's pathological researches have led to the same conclusion, and a further corroboration is afforded by the beneficial results of nerve-stretching. As regards treatment, ergot of rye has been found useful in the early stages; and strychnia, with friction, electricity, and exercise when the acute period has passed. [It is interesting to observe, that M. Charcot, in his *Leçons sur les Localisations dans les Maladies du Cerveau et de la Moëlle Epinière*, pp. 261–262, suggests that secondary spinal degeneration will doubtless be found, in some cases, to be dependent on lesion of the peripheral nerves. He was then acquainted with only three or four cases of this kind. In all, the lesion was situated external to the cord, on the roots of the cauda equina. In the lumbar region, the whole posterior column was degenerated, but higher up the columns of Goll alone were affected.—*Rep.*]—*London Med. Record*, Oct. 15, 1881.

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Myxœdema.

M. MORVAN, in the *Gazette Hebdomadaire*, August 26, and Sept. 2, 9, and 16, reports fifteen cases of myxœdema, from the study of which he reaches conclusions not entirely in accord with the opinions of others. He says that the anasarca, though always marked, is never extreme, and that the amount of it varies with the temperature, being more pronounced in winter than in summer. In his cases it was exceptional for œdema to appear to any extent in the mucous membranes, and he regards the roughness of the voice and the constipation occurring in the disease as due to paralysis of the nerves supplying the larynx and the muscles of the intestine, rather than to œdema. The complexion of his patients was generally good, and he has not noticed any change in regard to the skin. Speech is slow, the movements of the tongue are embarrassed, and the voice is rough. The patients walk with difficulty, and are unable to run; the upper extremities are feeble, and the fingers lose their dexterity, especially if the hands are put into cold water, when they can neither be opened nor shut completely; and these symptoms he believes to be paralytic. Sensation remains intact. On the part of the brain, vertigo, somnolence, delirium, and hallucinations were met with. The patients complain of cold. The course of the disease is slow, and its duration considerable. As to etiology, almost all the cases occur in the female sex; mostly in adults in middle life; in no case was a woman attacked before menstruation had appeared, but it has occurred in men; in nine out of fourteen cases it appeared at the menopause; it is possible that rapidly-recurring pregnancies may be an exciting cause as well as prolonged lactation; it may be hereditary, or due to nervous impressions; it attacked the peasant class most frequently. A humid climate probably predisposes to it, and it appears most often in winter. The disease is a neurosis of the central nervous system, affecting the afferent portion of the motor nerves, both of animal and organic life, they becoming paralyzed.—*New York Med. Journ.*, Dec. 1881.

Modern Remedies for Pertussis.

Professor HEUBNER, of Leipzig (*Wiener Med. Woch.*, No. 32, 1881), gives a statistical table of the effects of some modern remedies for whooping-cough. In one column he gives an analysis of the effects of the bromide of potassium, quinine, chloral-hydrate, salicylic acid, and belladonna. The comparative value of potassium bromide is shown by a comparison of twenty-three uncomplicated cases. In not one of these was the duration of the disease shortened, but, on the other hand, in nine of the cases the intensity of the paroxysms as well as their frequency was diminished. In respect to quinine (administered internally in small doses, not exceeding 4½ grains per day), Heubner observed three times, in eleven uncomplicated cases, an abbreviation of the duration of the disease, while the paroxysms also in five cases underwent a favourable resolution. Chloral-hydrate was given internally in two cases, in divided doses; in all the rest by one enema daily, containing a larger quantity. A diminution in duration of the disease was observed only twice in ten cases, while resolution of the individual paroxysms took place six times, and even to a greater degree than under the treatment by quinine. Salicylic acid was given internally but once, being administered at other times by inhalation of a one-half to one-third per cent. solution three times daily, in the dose of thirty grammes, by means of Siegle's apparatus. In the seventeen cases thus treated, the effect upon the length of the disease was very unimportant, since only twice could a positive shortening be credited to it. The alleviation of the paroxysms, on the other hand, was very gratifying; for, in ten of the seventeen cases, the diminution of the severity or of the frequency of the seizures was very striking. At one time the intensity, at another the frequency, was favourably reduced, without any perceptible change in the other factors of the disease. Belladonna was for the most part administered in the form of the powdered extract, and in a few cases in the form of the powdered leaves, the daily dose being 2.5 and 5 grains; and in eight complicated cases, besides the immediate checking of the paroxysms, the duration of the disease itself was cut short by the remedy, the attacks becoming also milder. It thus appears that, for the alleviation of the paroxysms, the inhalation of salicylic acid and chloral-hydrate promise the most positive results; while, for the abbreviation of the entire disease, the greatest benefit is to be expected from belladonna and quinine. Still these results are to be considered only relative.—*London Medical Record*, Nov. 15, 1881.

Carbolic Acid in Whooping-Cough.

Dr. MACDONALD (*Edinburgh Med. Journ.*, 1881, p. 1094) says that on extended trial he finds carbolic acid, in doses of one-fourth of a minim to a child of six months, one-half minim for a year, and one minim for two years and upwards, to be the best remedy for whooping-cough. The whoop goes; the vomiting ceases; the paroxysms are modified in intensity and frequency. This result Dr. Macdonald believes to arise from an action similar to that of creasote on the motor fibres of the vagus to the stomach, and from a lowering of vitality of the specific germ of whooping-cough disease. This points to the antiseptic treatment of the zymotic diseases generally.—*London Med. Record*, Nov. 15, 1881.

Treatment of Pleurisy.

Prof. DIEULAFOY, in a lecture upon this subject (*Gaz. des Hôpitaux*, No. 83), observes that the medical treatment of pleurisy has for its object the relief of the initial phenomenon of the disease, the pain—pain which irradiates over the whole side of the chest, and which may be localized in a point that may be exactly indicated by the patient. One of the most simple and efficacious means of relieving it is to apply dry cupping-glasses or with scarification to the painful part. Or hypodermic injections of morphia may be employed; and a very simple formula for this consists of ten centigrammes of chlorhydrate of morphia and ten grammes of distilled water, furnishing the proportion of one centigramme of morphia to one gramme of the whole, from half a gramme to not more than a gramme being injected at first. If these means do not succeed, we must have recourse to anodyne mixtures and to blisters applied *loco dolenti*. Blisters are of no other use than assuaging the pain, and should not be employed under the idea of effecting a derivation and diminishing effusion. They should not be made larger than a five-shilling piece. The first thing we are expected to do by the friends is to apply a blister, and the refusal to do this will incur blame; but the blister, without at all hastening the cure, impedes effectual auscultation and percussion, and therefore may prevent our ascertaining the amount of liquid effused. If, then, forced by the prejudices of the patient or his friends, we are compelled to apply the blister, this should be made as small as possible.

"When the fluid tends to increase, the family of the patient should at once be informed that an operation will probably be required. Its indications may be urgent or debatable. As to the first of these, if the patient has somewhat pronounced dyspnœa, complete dulness, and the tubular *souffle*, while from 2500 to 3000 grammes of liquid are supposed to be present, the operation should be performed at once, without waiting for to-morrow, when the patient may be dead. Hesitation here is entirely out of place. But under other circumstances, although the patient may have dulness, this is not absolute. There may even be a little sonority behind, above the spine of the scapula, and in front, opposite the clavicle. The heart is a little displaced if the effusion is on the left side; and the liver, if it is on the right side. The dyspnœa is not very considerable, and the liquid may be estimated at 2000 grammes. What are you to do here? Naturally enough, you are disposed to wait. The patient breathes pretty well, the cavity of the thorax is not filled, and you call to mind that thoracentesis has been accused of inducing purulency. Nothing seems very pressing, and you go away, saying you will decide to-morrow. Next day you receive a message that the patient, without apparent cause, had been seized with a fainting fit and died. These cases are by no means so rare as you may suppose, death taking place when the liquid has not amounted to more than 1800 or 2000 grammes, as a consequence of syncope or of asphyxia due to pulmonary thrombosis formed *in situ*. Read Trosseau, and the examples which he gives of sudden death in his chapter on Thoracentesis. For my own part, I do not hesitate to lay down the rule, that whenever we estimate the quantity of liquid effused at about 2000 grammes, we must operate. If this is refused, give up the case, and do not accept the responsibility of what may happen. Remember that dyspnœa is a treacherous sign, and that the only true guide is the quantity of liquid effused, while complications do not contraindicate the operation.

"Thoracentesis is not always so clearly indicated, and there are cases in which it is debatable. You meet with cases in which there are effusions of 1200 or 1500 grammes that will not absorb. Are you to leave the patient with this fluid in his chest? This would not be prudent. Are you to apply blister after blister? I have punctured patients who have borne eight, ten, or twelve blisters without a drop of the effusion having been absorbed. In such cases, if there is any tendency to absorption, I merely wait. I order neither sudorifics, diuretics, nor blisters, and if at the end of thirty or thirty-five days the effusion has continued stationary, I propose thoracentesis, with which both the patient and myself have always been satisfied.

"For the operation, you puncture with the needle No. 2 in the eighth intercostal space on a line springing from the inferior angle of the scapula. I recommend you *never to remove more than a litre of the liquid at once;* for I do not hesitate to affirm that if any terrible accidents have succeeded the operation, this has been because two or three litres have been withdrawn at a time. It is much better to remove another litre next day, and the 300, 400, or 500 grammes that may still remain will be absorbed without any attention being required."

As to the transformation of a simple into a purulent pleurisy by thoracentesis, Prof. Dieulafoy entirely denies its possibility when the operation is properly performed with *quite clean instruments*. Those used at the hospitals are often very dirty. He maintains that thoracentesis is a very simple operation, which should be performed without hesitation.—*Med. Times and Gazette*, Nov. 19, 1881.

Acute Pulmonary Œdema.

Dr. De La Harpe (*Revue Méd. de la Suisse*) calls attention to this serious and rare accident, which appears to be little recognized. The observations which he publishes on the subject are incomplete, inasmuch as the examination of the urine was not made, and it probably contained albumen. But whether the cases were examples of albuminuric œdema or not, the facts do not the less present real interest. The first patient, aged 43, went out in cold and wet weather, and had scarcely gone a few steps, when she uttered a cry, and fell, seized with mortal suffocation. She died a very few instants afterwards. In her last moments it was observed that there was easy and short respiration, accompanied with *râles*. It seemed that bubbling thick foam filled all the respiratory passages; moreover, foam of pure white colour, like eggs beaten into froth, escaped from the nostrils and mouth. An examination made some days before had shown that neither the lung nor the heart presented any appreciable lesion. Another patient, strong and robust, had already on different occasions been seized during the night with suffocation, which occurred unexpectedly and without known cause. One evening he went to bed in perfect health. He was scarcely asleep, when he awoke with a bound, seized with sudden suffocation. He jumped out of bed, traversed the chamber, and seated himself in a chair, with the death-rattle in his throat. A few instants afterwards he was dead. He died with white froth escaping from the nostrils and mouth.

But cases of this kind are not always fatal. Dr. De la Harpe treated on a former occasion a patient who had analogous crises ten or fifteen times without succumbing to them. He went to bed in good health. Towards midnight, or one o'clock in the morning, he was awakened by a sudden depression, accompanied by mortal anguish. In a few minutes the distress became extreme, and the aspect livid; death appeared imminent. The means employed always ended, however, by producing an improvement in the course of an hour. During all this time respiration consisted of an easy inspiration and a prolonged expiration, during which bubbling was produced throughout the chest, and seemed to fill the trachea. In a word, the patient, who was well a few minutes before, assumed the aspect of a moribund person suffocated by a frothy liquid, which filled the respiratory passages, and against which he struggled with all the energy of which his muscles were capable. The treatment consisted of hot dry applications and internal excitants, such as ether, ammonia, either pure or benzolated, or with aniseed in strong and repeated doses. But in the most violent crises these remedies did not suffice, and several times it was necessary to resort to a method which would seem to be of all means the least opportune—bleeding; nevertheless, it always succeeded, and immediately the crisis terminated by rapid eructations and forcible emissions of almost colourless urine. A crisis of this kind recurred twice or more frequently in the year. The patient was 65 years old when first taken. Towards the end of his life these crises became frequent and less vigorous, intelligence became obtuse, strength diminished, and finally occurred a slight degree of cachectic, and the patient succumbed with a great deal diminishing of strength. Dr. De la Harpe thinks that in this case also there was acute œdema of the lung; but, as an examination of the urine was not made in these patients, the albuminuric origin of the symptoms may be considered probable.—*London Medical Record*, Oct. 15, 1881.

Carcinoma of the Œsophagus with Perforation of the Left Auricle.

HINDENLANG reports in *Centralblatt f. d. Med. Wissenschaften*, No. 43, 1881, a case of carcinoma of the œsophagus which became adherent to the trachea and pericardium and caused necrotic softening of the left auricular and ventricular wall. The patient died from meningitis developed from emboli. Embolic infarctions were also found in the kidney, spleen, liver, and left parietal convolutions. Aphasia was also present. A somewhat similar case was published in the *Gazette Hebdomadaire*, in 1874, by M. Bertram.

Case of Rupture of the Septum Cordis.

Professor AXEL KEY and Dr. KJELLBERG relate in *Hygiea* for 1880 (*Nord. Med. Arkiv.*, Band xiii. Häft 2), the case of a man, aged 75, previously healthy, who, in July, 1880, was attacked with pain in the chest, eructations, general malaise, and pain in the left arm. He recovered so much as to be able to go out daily, but soon afterwards had an attack of weakness in the right arm. From this he had recovered somewhat a month later; but one day after dinner he was suddenly seized with pain in the region of the stomach, a sense of oppression in the chest, and pain in the back on the left side. In the evening, his hands and feet became cold. Over the apex of the heart, and through a great extent, a sharp systolic murmur was heard, replacing the first heart-sound, the heart's action was regular; the pulse could scarcely be felt in the right arm, and not at all in the left. He died during the night. At the necropsy, the heart was found to be somewhat hypertrophied. Nearly the whole of the septum ventriculorum was separated from its connection with the posterior muscular wall, and the posterior wall of the right ventricle was cleft for a very considerable extent. The rent began at the upper part of the left ventricle, about two-fifths of an inch from the aortic valves, and extended to the apex of the heart; for about four-fifths of an inch at the lower part it was complete, so that the two ventricles communicated. At the upper part, the rupture extended into the posterior wall of the right ventricle, separating into two layers. Nearly the whole surface of the rupture was covered with a thin and rather adherent layer of fibrin. The muscular tissue in general was flaccid, of a deep yellowish-gray colour. There were no essential changes in the valves or in the endocardium. The coronary arteries were in a state of advanced atheromatous degeneration, especially the right, the lumen of which, where it bent round the right border of the heart, was entirely filled with a firm adherent grayish-blue thrombus, rather more than an inch and a half long, and ending in a firm conical point. About two-fifths of an inch within, at the posterior part, the artery divided, and sent down in the ventricular furrow, behind the septum, a descending branch, which principally supplied blood to the ruptured part. No large ruptured vessel could be detected. Dr. Key says that the obstructing thrombus, in connection with the atheromatous degeneration, probably played the chief part in the production of the rupture. Probably, when the thrombus was formed, a rupture of a vessel with hemorrhage into the muscular tissue took place, producing distension of the muscular structure, which at last burst into the left ventricle, after which the rupture extended.—*London Med. Record*, Oct. 15, 1881.

Functional Murmur in the Pulmonary Artery.

From an interesting article on this subject, Mr. C. J. Nixon draws the following conclusions:—

1. That a functional murmur in the pulmonary artery, independent of anæmia or of direct pressure on the trunk or branches of the vessel, is not of infrequent occurrence.

2. That the conditions, given in order of frequency, in which it occurs are:—

(*a*) Acute articular rheumatism.

(*b*) Enteric fever.

(*c*) Fevers where there is great prostration and a tendency to profuse sweating.

(*d*) Bronchitis, or œdema of the upper lobe of one or both lungs.

(*e*) Nervous diseases, such as paraplegia from myelitis, tubercular meningitis, or in a debilitated state of the system, generally associated with hysteria or hypochondriasis.

(*f*) Cases, where, as from extreme serous distension of the cavity of the peritoneum, the diaphragm is subjected to great pressure upwards.

(*g*) Trivial affections, such as diarrhœa, dyspepsia, etc., especially where there exists a tendency to the paralytic thorax. Here it is usually met with in young and imperfectly-nourished adults, and occurs more frequently in females than in males.

3. That from the various conditions under which the murmur occurs it cannot be regarded as a sign of any special disease. It is in most cases of temporary duration, and it may occasionally be met with in a state of apparent health.

4. That its characters closely simulate those of a murmur of attrition—hence it has, in many instances, been erroneously regarded as a sign of localized pericarditis.—*Dublin Journ. of Med. Science*, Sept. 1881.

Diagnosis, Pathology, and Treatment of Fatty Heart.

Our knowledge of the disease termed fatty heart cannot be said, more especially as to its diagnosis and treatment, to be of a very definite or satisfactory character. Hence as a basis for further advance we are disposed to welcome the *resumé* of its diagnosis, pathology, and treatment given by Professor STOFFELLA, of Vienna, in a lecture recently published (*Wien. Med. Wochenschrift*, 1881, Nos. 26-28).

After distinguishing between fatty infiltration—which Dr. Walshe calls "local obesity" of the heart—and fatty degeneration, or the precipitation of fat within the primitive fibres, which latter alone he means when he speaks of "fatty heart," Professor Stoffella goes on to say that the diagnosis of the disease, except in its immediate beginnings, is by no means especially difficult. He lays especial emphasis on the weak and usually toneless character of the heart-sounds, combined with the presence of the usual causes of fatty degeneration of the heart. He also notes the weak or imperceptible heart's impulse, the weak compressible pulse, usually intermittent, irregular, and slow. Dyspnœa, permanent or spasmodic, and frequent syncope, with the absence of valvular or pulmonic disease, also assist in the diagnosis. He fails to comment on the relative pulse and respiration rate, which Dr. Walshe has found in some cases 2 : 1 ; nor does he mention the valuable, while not, as was at first thought, diagnostic, symptom of the "Cheyne-Stokes' respiration." We fear, however, that, notwithstanding all known aids, the diagnosis of this disease will in many cases be unmade, or, if made, will partake more of the character of a probable guess than a scientific conclusion. One of the grounds on which, as we have seen, Professor Stoffella bases his diagnosis, is the presence of the usual causes of fatty degeneration. But while, as we shall see, there is a certain amount of sure etiological ground, outside that lies a residue of cases in which, beyond the hypothesis of a hereditary tendency, we must acknowledge ourselves ignorant of the cause of fatty metamorphosis of the heart fibres.

In discussing the pathology of fatty heart, Professor Stoffella commences with some account of the physiological deposition of fat. Twenty years ago, Voit and Pettenkofer showed that the direct source of the fat in the body is not the carbo-hydrates, starch, sugar, etc., but albumen. The overplus of albumen left circulating in the blood or other fluids of the body, after deduction of that used in tissue-formation, is broken up into water, carbonic acid, and fat, while, so far as it is perfectly oxidized, it leaves the body as urea and uric acid. The amount of fat deposited will therefore depend on (1) the amount of the "circulating albumen," and (2) the small relative supply of oxygen. As to other sources of fat, it is at least doubtful if gelatine forms fat, and of ingested fat only stearin, palmitin, and olein—the varieties naturally present in the body—go towards the production of fat. While, however, albumen is without doubt the direct source of fat, it is a manifest fact that gelatin, fat, and the carbo-hydrates help the production of fat in the body. This they do by oxidizing and splitting up more readily than albumen, thus using up the available oxygen, so that albumen is oxidized simply to fat, in place of to water and carbonic acid. By their oxidation, also, the carbo-hydrates spare the fat of the body, while, according to Voit, gelatine saves the blood and tissue albumen.

Parenchymatous fatty degeneration is fundamentally the same process as the physiological formation of fat—that is, the albuminous contents of cells imperfectly oxidized deposit fat granules as a part of the process of destruction, morbid or natural.

Fatty heart is thus, Professor Stoffella says, the expression of a disturbance of nutrition, either purely *local*, as in disease of the coronary arteries or advanced fatty infiltration of the heart, or *general*, as in anæmia and chlorosis, in alcoholism, Bright's disease, the acute exanthemata, and all marasmic diseases. How comes this about? Two sets of experiments help us here. First, Dr. Litten has shown that the muscles of guinea-pigs kept for a lengthened period in a high temperature undergo fatty degeneration—first the heart, then the respiratory muscles, and lastly the body muscles, accompanied by changes in the blood corresponding to those in typhoid fever. Again, various Continental observers have shown that if dogs and other animals are subjected to successive blood-lettings, fatty degeneration of the heart supervenes. The result is the same in both sets of experiments, therefore, and the common point between them is the poverty of the blood in red corpuscles. But the red corpuscles are the oxygen-carriers of the body, therefore a deficiency of oxygen follows, resulting in an imperfect oxidation of the organic albumen in cells and tissues. The difference between the physiological and the pathological process is, that in the first the "circulating or store albumen" becomes fat, in the second the "organic or tissue albumen."

The treatment of fatty heart recommended by Professor Stoffella follows as a natural corollary from what has just been said. Deficiency in the oxygen-carrying red corpuscles being the cause of the disease, our object is to stimulate the blood-forming function. Our most valuable agent for this is iron, and this must be used with perseverance on the part both of doctor and patient. Should the digestion be unweakened, the best preparation, according to Professor Stoffella, is the sulphate of iron in the form of Blaud's pills. Niemeyer's formula for these is—℞. Ferri sulph. pulv., potass. carb. pur., āā ℥ss, mucil. tragacanth. q. s. ft. mass. et div. in pil. xcvi. Of these Professor Stoffella gives three thrice daily, immediately after meals, to prevent cardialgia. Should constipation be present, add jalapin or extr. aloes aquos. Where digestion is weak, Professor Stoffella recommends the milder pyrophosph. ferri et sodæ solutum. The iron treatment must be continued for several months, combined with quinine or extr. quebracho should the dyspnœa and chest oppression be troublesome. When the degeneration occurs as a consequence of valvular disease, he would also give digitalis or quinine. The alkaline mineral waters, mildly purgative and containing iron, usually benefit much. The diet ought to consist principally of lean meat, with green vegetables, bread, eggs, milk, rice, and a fair allowance of wine. All fats, potatoes, beer, brandy, etc., are to be excluded. The carbohydrates, fat, and gelatine must, however, be allowed in restricted amount, as otherwise, from the difficulty of oxidizing albumen, muscular reparation and animal warmth suffer. Also, nausea and disturbance of digestion result very soon from an exclusively flesh diet, as seen in the Banting cure.—*Med. Times and Gaz.*, Oct. 1, 1881.

Slow Pulse.

M. LAURE (*Lyon Méd.* No. 32) brought a man, twenty-six years of age, to be exhibited at the Lyons Medical Society, with a very slow pulse. He had latterly suffered from attacks of syncope, a sense of oppression, and palpitation. A careful examination of his heart revealed absolutely nothing abnormal, and the sphygmographic tracing denoted a feeble amount of tension, and slightly resembled the tracing derived from aortic insufficiency. The pulse varied from twenty-six to forty in a minute, digitalis and bromide of potassium exerting no sensible influence on it, while the rate is always reducible to twenty-six or twenty-four if the patient attempts to run for a few minutes.—*Med. Times and Gaz.*, Oct. 29, 1881.

Calcareous Pericardium.

Hitherto, in text books and systems of medicine, calcareous pericardium has received but a sparing notice, and that under the heading of adherent pericardium. The cases on record are few and variously denominated; some are imperfectly described, and without history, so that their value for statistics is thereby much diminished. From the consideration of a case occurring in his own practice, in conjunction with others scattered throughout medical literature, Dr. EDWIN RICKARDS arrives at the following conclusions:—

1. Calcareous pericardium is the result of pyopericarditis, rather than, as is often held, the calcareous degeneration of the fibrous medium uniting the parietal and visceral layers of the pericardium formed during pericarditis; the pus in pyopericarditis undergoing caseation, and ultimately calcification.

2. The amount of calcification depends upon the amount of pus formed. In non-rheumatic pericarditis, the inflammation may stop short of suppuration, or the pericardial sac may contain a small or large quantity of pus. Hence, in adherent pericardium from non-rheumatic pericarditis, the pericardium may be free from calcareous matter, or may contain calcareous plates, or may be converted into a calcareous chamber. My experience in the *post-mortem* room does not tell of any case of rheumatic pericarditis where the pericardium contained pus, or where the pericardial adhesions were calcareous.

3. The calcareous matter situated between the visceral and parietal layers of the pericardium is almost exclusively confined to that part of the pericardial sac surrounding the ventricles; and, while having the consistency and chemical composition of bone, wants the structure peculiar to the latter.

4. Atrophy of the ventricles is more frequently associated with calcareous pericardium than hypertrophy. The two causes which appear chiefly to determine hypertrophy in adherent pericardium are adhesion while the heart is in a state of inflammatory softening, and valvular lesions. The pus in pyopericarditis becoming inspissated very gradually, time is thereby given for the heart to recover from any myocarditis which may have been present before adhesion takes place; and, when the pericardium becomes calcareous, the rigid casing by compression of the inclosed organ causes the heart to atrophy. Valvular disease of the heart appears to be a rare exception in calcareous pericardium, and, where present, to be very inextensive, amounting only to a nodule in one cusp of the mitral valve in Laennec's case (*op. cit.*, Case 48), and to a bead in one segment of the aortic valve, not causing insufficiency, in Ziemssen's case (*op. cit.*, *Cyclopædia of Medicine*); and in both cases the lesion may have been of independent origin.

5. The auricles in calcareous pericardium are dilated and hypertrophied—hypertrophied to compensate for their dilatation from over-distension by accumulation of blood in them, in consequence of impeded circulation through the ventricles.

6. That calcareous pericardium is not of rheumatic origin.—*Brit. Med. Journ.*, Nov. 12, 1881.

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Drainage of the Pericardium.

A case, probably unique in the annals of paracentesis, has been recorded by Rosenstein, of Leyden. A child, aged ten years, suffering from pericardial effusion, presented such a degree of interference with circulation and respiration, that an aspirator needle was passed into the fourth intercostal space near the sternum, and 620 cubic centimetres of liquid were withdrawn. Left-sided pleural effusion soon followed, and 1100 cubic centimetres of liquid were evacuated. The cardiac symptoms increased, and necessitated a second puncture of the pericardium; 120 cubic centimetres of purulent liquid were withdrawn. A relapse occurring, a larger opening was made (an inch and a half long) in the fourth intercostal space. The soft parts were divided layer by layer under strict antiseptic precautions. When the pericardial cavity was reached, a large quantity of pus escaped. Two drainage-tubes were inserted. The operation was followed by an immediate return of the circulation and respiration to normal conditions. An incision into the pleura, however, also became necessary. At the end of four months of treatment the patient left the hospital in good condition. There was no pyrexia or œdema of the skin in the præcordial region to indicate the purulent nature of the effusion —*Lancet*, Oct. 15, 1881.

Spontaneous Rupture of the Stomach.

CHIARI and LANTSCHNER each report a case of this kind. Chiari's case concerned a fifty-three year old woman, who died a few hours after admission into the hospital, the symptoms consisting only of several attacks of vomiting and of intense pain in the belly. On post-mortem examination the curvature of the greatly dilated stomach was found very much shortened by numerous cicatrices, the pylorus being thereby sharply bent on itself, although still permeable. A longitudinal rupture was present in the most extensive cicatrix, extending 3 ctm. on either side beyond the limits of the latter. The laceration involved the mucous membrane, the muscular strata, the peritoneum in the region of the scar, and also the dense adhesions which had formed between the peritoneal surface of the stomach and the peritoneum of the omentum, which had constituted the floor of the ulcer. There were also two smaller lacerations in the vicinity, affecting only the mucous membrane. The margins of the rents were free from any signs of peptic erosion, so that Chiari concludes that the case was, in part, at least, one of spontaneous gastrorrhexis. A very extensive subperitoneal, mediastinal, and subcutaneous emphysema gradually developed after death. Lantschner's patient was a lady, seventy years of age, who had been affected for forty-five years with an umbilical hernia, which had attained the size of a large gourd. After having taken a walk she complained of great thirst, and subsequently had nausea and vomiting. While retching, the patient and those at the bedside heard a loud report, which was succeeded by collapse, death setting in about thirteen hours later. On post-mortem, the hernial sac, consisting of peritoneum, was found to contain the small intestines, with the pyloric end of the stomach, the coils of the former being partly matted together by adhesions, partly constricted by bands of adventitious connective tissue running from the intestine and mesentery to the thickened hernial sac. Along the posterior wall of the stomach, involving all the coats of the organ, there was a rent several centimetres long, through which particles of food had passed into the peritoneal cavity. In other respects the walls of the stomach were perfectly healthy.—*Med. Record*, Nov. 25, from *Allgemeine Med. Central-Zeitung*, July 27, 1881.

The Benzoates in Dysentery.

Mr. GEO. HARRIS, officiating civil surgeon, of Burrisaul, brings to the notice of the editor of the *India Med. Gaz.*, Aug. 1, 1881, and that of the profession generally in India, the great value in the treatment of dysentery, both the acute and subacute varieties, of the benzoates of ammonia and soda, in doses of ten to twenty grains, twice, three times, or more frequently, daily. He generally uses fifteen grains three or four times daily, and prefers the salt of ammonium. He finds that it rapidly causes an active secretion of bile from the liver and cessation of the acute symptoms. He has used it a good deal in the gaol and in private practice, and has had very good reason to be satisfied with the results. The experiments being at present only tentative, the exact dose and time of administration cannot be exactly fixed. Further experiments and practice will decide if larger doses may be better. In most cases patients tolerate the drug readily, and under its use the stools rapidly become fecal. He suggests that the excess of bile poured out into the intestine acts beneficially on the congested or even ulcerated large intestine.—*London Med. Record*, Nov. 15, 1881.

Abscess of the Pancreas with large Lumbricus obstructing the Pancreatic Duct.

Dr. JOHN SHEA reports in the *Lancet* for Nov. 5th, the case of a woman aged twenty-nine, who was admitted to the Royal Berkshire Hospital on May 17th, complaining of abdominal pain and jaundice. After a few days' treatment with alkalies, she improved, but on June 3d, she stated she was not so well, and had had no sleep during the night; pain had returned over the gall-bladder, and there was nausea. In the evening there were pain and sickness, with vomiting of dark bilious matter. The patient was again distinctly jaundiced. She was treated by sinapisms and effervescing medicine. The bowels were freely open, but the sickness continued. She was worse during the night, the breathing gradually got short and difficult, and at five o'clock on the morning of the 4th she lapsed into unconsciousness. Sinapisms were applied, and beef-tea and brandy enemata were administered. She remained all day with feeble pulse in the same condition, and died without rallying next day at noon.

Necropsy.—The body was fairly nourished and distinctly jaundiced. The lungs were slightly congested at the base. Liver large, pale, and soft. Pancreas enlarged and hard, being the seat of an abscess containing pus. A round worm seven inches long was found folded upon itself, lying in and obstructing the pancreatic duct, the larger portion of the worm being in the duodenum. The intestines were healthy. No other worms were present, and none were known to have been passed previously. Heart somewhat large and fatty. Kidneys pale. —*Lancet*, Nov. 5, 1881.

Valerian and Zinc in Diabetes Insipidus.

Dr. RICHARD H. PRIOR reports in the *Lancet* for Oct. 15, 1881, a case of diabetes insipidus cured by tincture of valerian and valerianate of zinc, the latter being given in pill form and gradually increased from two grains up to twelve three times daily, and the ammoniated tincture of valerian from one drachm up to two and a half three times daily.

SURGERY.

Electrolytic Treatment of Malignant Tumours.

Prof. SEMMOLA, of the University of Naples, has been investigating the electrolytic treatment of malignant tumours. His experience was gained in the treatment of six cases—one of epithelioma of the right breast, the size of an orange; a fibro-sarcoma of the right breast; two cases of sarcoma of the right breast; one case of sarcoma of the left breast; and one cysto-sarcomatous tumour, growing from the upper third of the arm. In five of these cases amputation of the diseased part had been recommended by experienced surgeons, and the sixth was a case of recurrence eighteen months after the removal of the primary sarcomatous tumour.

The tumours are said to have had all the clinical characters of malignant growths, and to have been examined microscopically by Professor Petrone. The needles employed were the steel needles in common use for electrolytic purposes, and they were passed deeply into the tumour, converging towards its centre. In his earlier experiments only the negative pole was thus inserted, the positive pole being placed on the chest, but in the later ones he found it beneficial to pass in both poles of the battery. The batteries used were Stöhrer's and Onimus's; with the former the deviation of the galvanometer was 90°; with the latter 60° to 75°. In small tumours one inserted needle was found sufficient; but Dr. Semmola believes that he has obtained a more settled action. As a rule, passing the needles causes next to no pain or difficulty, but at times small sclerotic foci interfere with their transit. Very rarely did any painful inflammation attack the spots of puncture. The constant current should be used frequently, even three times in the twenty-four hours, and allowed to flow through the new growth for an hour each time. A weak current, long-continued, seemed to be better in its effects than a stronger current acting only for a short interval, and it is stated that the former has a greater modifying effect upon the local chemistry of nutrition. While the current is passing the galvanometer oscillates between 10° and 15°. This shows that there is some modification in the resistance offered by the tissues, and is a mark of the change produced by the current. In one case the treatment was ended in twenty-four sittings, but in another it extended over seven months. In the case of cystic sarcoma, after two applications of electricity, inflammation and destructive suppuration set in. In none of the cases were the lymphatic glands affected. Dr. Semmola suggest that electrolysis cures malignant tumours in one of three ways: by producing small foci of inflammation with consecutive sclerosis, the tumour being converted into a small, indurated and harmless lump; by producing a colloid and fatty degeneration, especially in tumours with this tendency; and by exciting destructive inflammation and suppuration of the tumour. Along with this local treatment in all his cases Dr. Semmola has combined the administration of large doses of iodide of potassium, with the view of gravely modifying the general nutrition.—*Lancet*, Nov. 26, 1881.

A Remarkable Wound of the Brain.

An instance of singular tolerance of a severe wound of the brain was recently communicated by M. DUBRISAY to the Société de Médecine de Paris. A man, aged forty-four, in an attempt at suicide, sent a small dagger through his skull into the brain. The weapon was ten centimetres long and one wide. He had held the dagger in his left hand, and given it with the right several blows with a mallet, believing that he would fall dead at the first blow. To his profound surprise he felt no pain, and observed no particular phenomenon. He struck the dagger, in all, about a dozen times. The man was a drunkard, but was sober at the moment of the attempt. When seen, about two hours latter, the handle of the dagger was projecting from the skull at the junction of the posterior and middle third, a little to the right of the middle line, and in a transverse position. The whole blade was embedded except a part one centimetre in length. For half an hour unsuccessful attempts were made to get the dagger out. The patient was placed on the ground, two vigorous persons fixed his shoulders, and aided by a strong pair of carpenter's pincers, repeated attempts were made, but without success. The patient and assistants were raised off the ground, but the dagger was immovable. These attempts caused no pain. More powerful mechanical instruments were then employed. The patient, who walked well, and complained of no headache, was taken to a coppersmith's, and by strong pincers the handle of the dagger was fastened to a chain, which was passed over a cylinder turned by steam power. The pincers, used for drawing out tubes of copper, were so made that the more they were pulled the tighter they grasped. The man was then fastened to rings fixed in the ground, and the cylinder was gently set in motion. At the second turn the dagger came out. The blade measured ten centimetres in length, of which nine had entered the interior of the skull. The patient, who had submitted with the greatest coolness to these manœuvres, suffered no pain or inconvenience. Some drops of blood escaped, and a few minutes afterwards the man was able to walk away to a hospital, where he remained in bed for ten days, but without fever or pain. He then returned to his work, and the wound gradually healed. M. Dubrisay endeavoured by a post-mortem experiment to ascertain what parts of the brain had been injured. He drove the dagger into the head of a cadaver in the same situation, and to the same depth, and found that, without injuring the superior longitudinal sinus, it had passed into the cerebral substance just behind the ascending parietal convolution, and thus behind the motor zone; the point had not reached the base. The difficulty in extraction had been due solely to the fixation of the instrument by the edges of the wound in the bone.—*Lancet*, Nov. 12, 1881.

Salivary Colic: Expulsion of Two Salivary Calculi.

Dr. R. SAINT PHILLIPPE reports in the *Journ. de Méd. de Bordeaux*, Août 7, 1881, the case of a man who was believed to have an abscess of one of the salivary glands: there was great pain in the maxillary, cervical, and temporal regions of the left side, with diffuse swelling under the jaw and on the floor of the buccal cavity. At the same time the masseter muscles were in a condition of contracture, preventing complete opening of the mouth. Digital exploration revealed the existence of a pocket on the left side of the frænum in the course of Wharton's duct: incision of this tumour was only followed by the escape of blood and saliva, but it produced considerable relief. Several hours afterwards the patient drew from his mouth two salivary calculi, about the size of a bean and pea. All the symptoms then disappeared, and exploration of the duct by means of a probe passed through the wound showed that no other calculus was present.—*L'Union Médicale*, Oct. 25, 1881.

Two Cases of Malignant Stricture of the Œsophagus in which Gastrostomy was Performed.

At a meeting of the Clinical Society of London, on Oct. 28th, Mr. REEVES contributed a paper with the above title. After narrating the two cases, he pointed out how, having done gastrostomy in deference to the wishes of his colleagues, he should proceed to act in any suitable case of stricture of the œsophagus. He said that the most recent information showed that malignant obstruction was most common in the upper part of the tube, occurring in that situation in about half the cases; and, although a much larger number of observations was needed to arrive at a correct conclusion, still there was sufficient justification for the rules he wished to lay down, which were the following: 1. Because of the great mortality after gastrostomy, and also because of the more frequent occurrence of malignant stricture in the upper portion of the tube, œsophagostomy was by far the preferable operation. 2. Even in cases where the stricture was situated as low down as the manubrium sterni (its depth rarely being very great), œsophagostomy was indicated as a preliminary or exploratory operation; and, if it were found that the little finger or sound could not be passed through the narrowing, gastrostomy might then be performed. 3. If it resulted that the opening in the œsophagus had been made below the stricture (as in most cases would be desired), the operation could be completed by stitching the mucous membrane to the edges of the wound, and the stricture might, if thought proper, be dilated through the opening either at the time of opening or subsequently. 4. If the diseased œsophagus were reached, and no opening into it could be made through healthy walls, then it might be carefully performed either by the finger or the thermo-cautery. 5. Œsophagotomy had been many times done, œsophagostomy several, and never had these operations caused any grave local or general symptoms, or, as operations, led to the death of the patient; where gastrostomy had proved most fatal. 6. The operation should be done on the left side of the neck, and a sound, if possible, be passed, that of Vacca-Berlinghieri being the best. The skin-incision should be rather the mid-line than that for ligature of the common carotid, and should extend from half an inch above the episternal notch to the level of the upper border of the thyroid cartilage. The surgeon should stand on the left of the patient, looking obliquely down and across his or her body. A tube with a funnel-shaped end should be passed, tied in place, and nourishment administered as soon as the tendency to vomit caused by the anæsthetic had passed off. It was necessary to make the opening in the walls with a sharpish stab, to prevent the loose mucous membrane being pushed before the knife. The edges of the wound might be stitched up, care being taken that no food entered. 7. The operation should be undertaken before the patient's strength was much exhausted, and even before obstruction was complete, because frequently attempts to swallow produced spasmodic suffocative dyspnœa, as in the first case related. 8. In severe cases of simple fibrous or syphilitic stricture in the tracheal or upper thoracic portion of the tube, œsophagostomy was indicated, as then the operation might be curative as well as palliative.—*Med. Times and Gazette*, Nov. 12, 1881.

Mr. **Golding-Bird** began the discussion by giving abstracts of five cases of cancer of the œsophagus, in four of which he had performed gastrostomy. His cases showed that the chances of giving relief were inversely as the length of time the patient had suffered. One man had lived for five months after gastrostomy; he was sixty-six years of age, but his symptoms (dysphagia) had only existed for two months. All the other cases had much longer histories. Peritonitis had only been encountered once, and was then due to an accident in feeding, not likely often to recur. He advocated early recourse to gastrostomy, before the patient's digestive and recuperative powers generally were enfeebled by the malady. The operation should be done with all the cautions which Verneuil and Howse had introduced into the procedure, and which included the stitching of the wall of the stomach to the abdominal opening by two circles of sutures about an inch apart, and the deferring of the opening of the stomach for about four or five days after such stitching. In Mr. Golding-Bird's experience, in that of Dr. Goodhart, and of Mr. Lister, the cancer was usually situated at the lower part of the œsophagus, and even if it could be felt high up, one could not be sure how far it extended below; so that Mr. Golding-Bird considered gastrostomy with precautions at an early stage of the disease far preferable to œsophagotomy.

Mr. **Durham** offered a third suggestion for treatment, viz., the feeding of the patient through an elastic catheter passed into the stomach from the mouth, and allowed to remain there for about four or five days, until, in fact, it was necessary to remove it and introduce another. This alternative plan of treatment he had adopted in several cases with happy results. In one case a No. 7 catheter could only at first be passed, whereas after four months the patient was wearing a No. 12 catheter. Dr. Krishaber, at the recent International Medical Congress, had advocated the passage of the catheter through the nostril; the policy of this modification was combated by Mr. Durham as being more disagreeable than the wearing of a "nice little pipe in the mouth." He thought that if feeding through a tube could be accomplished, it should certainly be attempted before either œsophagotomy or gastrostomy was performed.

Dr. DOUGLASS POWELL warned the users of the catheter against the dangers of the passage of the instrument from ulceration, elsewhere than into the stomach; but Dr. Andrew Clark and the surgeons who subsequently spoke, almost all advocated the use of the catheter as long as possible. And this would seem to be the outcome of the discussion: that the catheter should be used where at all possible, and that for several reasons; first, to feed the patient; secondly, to dilate the stricture; and, thirdly, to arrest the growth of the cancer, as often happens when its surface is no longer irritated by the constant passage of food across it. When the catheter can no longer be passed, the alternative lies between œsophagotomy and gastrostomy; and of these, the latter operation would appear to be held at present in somewhat the better repute. But, whichever procedure is determined upon, its performance should not be deferred; it should be done whilst the patient has yet in him the strength which may enable him to undergo and recover from the operation.—*British Med. Journal*, Nov. 26, 1881.

Resection of the Stomach for Cancer.

We are informed that the condition of the patient upon whom Dr. Wölfler operated for carcinoma of the pylorus, exactly half a year since, is in every way satisfactory, no sign of relapse having appeared. It is the fourth case in Dr. Wölfler's book, "Ueber die Resektion des carcinomatösen Pylorus." This book, we may mention, has already been translated into Russian and Italian, and is about to appear in an English dress, so great is the interest everywhere taken in this important operative procedure inaugurated in Billroth's clinic.—*Med. Times and Gazette*, Nov. 19, 1881, from *Wien. Med. Woch.*, October 15.

Prof. BILLROTH attributes the failures which have followed his methods of partial excision of the stomach to the collection of the food in the dilated fundus. He, therefore, modified his operation by establishing a direct communication between the distended fundus and the duodenum; the only instance, however, in which this operation was performed was not very encouraging. The patient vomited continuously, the ejecta being principally bile, and death occurred on the tenth day.

The fatal result is attributed by Prof. Billroth to the fact that the contents of the stomach instead of passing down the small intestine, regurgitated through the knuckle of duodenum between the junction of the gut and stomach. He thinks this result can be avoided by the insertion of a valve to prevent this regurgitation. —*Allgemeine Wiener Med. Zeitung*, Oct. 25, 1881.

The frequency with which resection of the cancerous pylorus has been performed during the last year, particularly in Germany, raises the question as to whether in it we have really an operation which may seriously modify the prognosis in such cases. M. MAUNOURY has recently published an analysis of seven cases performed during the last year; 3 by Billroth, 1 by Rydygier, 1 by Wolfler, 1 by Czerny, and 1 by Bardenheuner, and gives the following *résumé* as to the *technique* of the different operators.

When it is intended to practise resection of the stomach, an examination, according to Wolfler, should first be made while the patient is anæsthetized, in order to thoroughly appreciate the volume, mobility, and adherences of the tumour. For several days preceding the operation, nutritive injections of peptone are administered, and on the day before and two hours before the operation, the stomach is washed out several times. It is needless to say that all antiseptic precautions are observed.

The incision of the abdominal walls may be made in the linea alba (Péan), parallel to the linea alba and a little to the right (Rydygier), or transversely where the tumour is most prominent (Billroth, Wolfler). The peritoneum once opened, the tumour is reached, and it is at once decided whether the operation must be abandoned, as when the cancer has invaded the pancreas, the descending portion of the duodenum, or the liver. The operation may be completed, though with great difficulty, when the cancer has invaded the transverse colon or the abdominal wall. If it is found that the tumour can be removed, the adherences are broken up and the tumour separated from the great and lesser omentum throughout its entire extent; if any of the glands are infiltrated, these are removed at the same time. This being done, Rydygier places his compressors on the stomach and duodenum, at the boundaries of the tumour, which is then removed by division of the intestinal walls near the compressors. Billroth, on the other hand, does not employ compressors, which he regards as useless, if the stomach has been well washed out before the operation, and if one takes care to pass a cloth under the stomach during the incision of that organ.

The tumour being removed, there now remain two unequal openings. Rydygier diminishes the size of the opening in the stomach by cutting out a triangle in the greater curvature and sewing together the edges of the notch thus made. Billroth simply passes sutures through the gastric wall until the opening left is the same size as that of the intestine. Wehr advises, not the contraction of the orifice of the stomach, but the enlargement of that of the duodenum by an oblique or angular incision through this portion of the intestine.

Finally the stomach is reunited with the duodenum by a double row of stitches, one passing through the mucous membrane, the other through the muscular and serous coats. Either catgut (Rydygier) or carbolized silk (Billroth) may be used for the sutures. Wehr attaches great importance to the manner of placing the sutures, as does also Billroth, who further takes the precaution, before closing the abdomen, of going over each suture to see that it is firm. The abdominal wound is then closed as in other laparotomies, and dressed after the antiseptic methods. For the first few days the patient takes only ice by the mouth and is fed by injections of peptone and wine.

It is needless to say that this operation is attended by considerable danger, but it appears that peritonitis is not the most frequent complication; death occurs most often from collapse. Hemorrhage, also, above all when secondary, is a complication much to be feared; Billroth advises the ligature of all vessels before they are divided.

If now we pass to the consideration of the results of these cases in which the patients recovered from the operations, as regards permanent success, we find that Billroth's patient died of general cancer of the peritoneum four months after the operation, while in the cases of Czerny and Wolfler too little time has elapsed to enable any opinion to be formed as to the utility of intervention.—*Le Progrès Médical*, Nov. 26, 1881.

Operative Fixation of Movable Kidneys.

HAHN has detailed in the *Centralblatt für Chirurgie*, July 23, 1881, a new operation as a substitute for nephrectomy, in cases where this would be indicated simply by reason of excessive mobility of the kidney. The operation, which has been performed on two patients, may be briefly described as follows: The patient having been placed on the side opposite to that of the affected organ, an incision was carried along the outer border of the corresponding sacrolumbalis muscle from the lower border of the twelfth rib to the crest of the ilium, successively dividing the skin, the latissimus dorsi, and the external layer of fascia enveloping the sacrolumbalis. The last named was then drawn toward the median line, after which the quadratus lumborum muscle and the fibrous layer of the peritoneum were incised. It may be remembered here that, according to Arnold, the kidney is not entirely extraperitoneal, the anterior surface of the viscus being covered by the serous layer, and the posterior surface by the fibrous layer of the peritoneum, so that an incision through the latter does not necessarily involve an opening into the peritoneal cavity. Pressure was now exerted upon the anterior surface of the belly, so as to force the kidney into the wound, to which it was there attached by eight or ten catgut sutures, after which the whole wound was plugged with carbolized gauze. There being no reaction, the first dressing was only removed on the fifth day, the subsequent ones at corresponding intervals. In about four weeks the wounds were almost entirely healed, and the kidneys were found firmly fixed in their new location. In both cases, however, a slight degree of mobility could still be detected at a somewhat later period. It would seem advisable, therefore, in future operations to partially strip off the adipose capsule from the posterior surface of the kidney and then to stitch this part of the capsule into the wound; it would also be preferable to fix the kidney as low down as possible, in order to give the organ a firm support, and to prevent any tension upon the seat of fixation during the assumption of the upright posture. Experience teaches that a dislocated kidney creates no disturbance, no matter how low it is placed, so long as it is firmly secured in its new location.—*Med. Record*, Nov. 12, 1881.

Extirpation of the Kidney.

A summary of experience with this operation in a large number of cases is given by KRONER, in a paper published in a recent number of the *Archiv für Gynäkologie;* this will therefore, doubtless, be read with interest. At the time Dr. Kroner wrote, the operation had been performed forty-one times, or rather, forty-one cases of its performance had been published. The following were the diseases for which it was done: In 8 cases, for hydronephrosis; in 1, cystic disease of doubtful origin; in 10, for malignant tumours of the kidney; in 2, cases of movable, but otherwise healthy, kidneys; in 1, the organ was removed along with a retro-peritoneal fibroma; in 1, on account of a fistulous communication between the ureter and the abdominal wall; in 1, for ureto-uterine fistula; in 1, for ureto-vaginal fistula; in 4, for renal calculus; in 2, because the presence of a stone in the kidney was suspected; in 4, for pyo-nephrosis; in 4, because of damage the result of injury; in 1, for disease, the nature of which is not clearly explained; in 1, part of the kidney was removed along with a hydatid cyst. In 21 of the cases the operation was performed by the abdominal incision, with 14 deaths; and in 20 by the lumbar incision, with 5 deaths; but in 3 other of these the result is not stated. Dr. Kroner does not think the higher mortality of the operation by abdominal incision is from any greater danger attending it, but because these cases included those in which the diagnosis was uncertain, and the abdomen was opened tentatively. As Dr. Kroner gives his authority for each case that he quotes, his paper is of much value for the purpose of reference. He also discusses the treatment of hydronephrosis by incision and drainage. He can only find five cases on record, three of which died. He comes to the conclusion that it is impossible to secure obliteration of a hydronephrotic sac. If there be any bit of secreting tissue left, this will, when the pressure of the retained fluid is removed, go on secreting urine. Injection of the sac with iodine is fruitless. To find the orifice of the ureter and restore its patency, is so difficult as to be practically impossible.—*Med. Times and Gaz.*, Oct. 22, 1881.

In the *British Medical Journal* for Nov. 5, 1881, Mr. WALTER WHITEHEAD reports a case in which he extirpated the kidney for primary sarcomatous tumour, with fatal result. The patient was aged 46. On the right side of his abdomen a small, firm, freely movable globular tumour could be felt; its upper border was about one inch below and separate from the liver; its lower border was in a line with, and about two inches to the right of, the umbilicus. Percussion gave a dull sound, and no bowel could be detected over the tumour. It was perfectly painless. The patient had been aware of its presence for some short time, but felt no inconvenience from it. Percussion of the lumbar regions behind gave a duller sound on the right than on the left side, but no fulness could be detected on that side. The urine, which was examined at the time, was uniformly dark red, containing a considerable amount of blood intimately mixed with it. Microscopically examined it showed, besides blood-corpuscles, some large round cells with large nuclei, filling up nearly the whole of the cell. There were no renal casts seen. From these symptoms the diagnosis of tumour of the right kidney, probably of a sarcomatous nature, was made.

The rapid growth of the tumour, and the commencement of failure of the general health of the patient, made it evident that, if an operation were practicable, it should be undertaken soon. The free mobility of the tumour, the absence of peritonitis and of any evidence of secondary deposits, were strong points in favour of operative interference.

The operation was performed, under chloroform, on September 5th, 1881. after the following manner. An incision was made from an inch above the umbilicus downwards along the linea alba for about four inches, and the subjacent tissues were successively divided until the cavity of the abdomen was entered. A careful exploration of the surroundings and connections of the tumour was then made, and the correctness of the diagnosis verified. The examination further showed that the incision made was altogether inadequate, it being evident, from the size of the tumour, its deep attachments, and the large friable superficial vessels ramifying on its surface, that the greatest caution would be required to effect a successful removal; consequently a transverse incision was made from the centre of the first incision through the loin.

The omentum investing the front aspect of the tumour was divided in a longitudinal direction, principally by scratching with the finger-nail, and also by gently tearing. .The ureter, next coming into view, was divided between two ligatures. The renal vessels were, notwithstanding their immense size, found with considerable difficulty; they were tied with a double silk ligature, and divided. One ligature was, in fact, imbedded in the substance of the tumour, the distance between the growth and the vena cava leaving no alternative. The kidney was then found to be attached by a firm, tough band to the diaphragm; and, when this was divided by scissors, the whole growth could be removed from the abdomen. A number of vessels required torsion and ligature during the operation, but, at its completion, no danger was apprehended from further hemorrhage. The edges of the incisions were brought together by silver sutures, a large drainage-tube was placed in the cavity previously occupied by the tumour, with the orifice protruding through the most dependent part of the wound in the loin, and the end of the ligature attached to the renal vessels was also brought through the same opening. The operation was conducted under the carbolic spray, and the wound was dressed antiseptically after the operation, which occupied an hour and twenty minutes.

The cause of death, which ensued four days after the operation, must be regarded as somewhat obscure. The shock of the operation had never been very marked, the lowest temperature recorded after the operation being 98°. Peritonitis, through present, was of a subdued character, having produced neither marked pain nor prominent distension. The possibility of septic poisoning was not supported by any rigours or rise of temperature, nor was it indicated by signs of putrescence in the discharges. Pulmonary embolism was not confirmed by investigations specially directed to ascertain the possibility of this contingency. The loss of blood during and after the operation was certainly considerable, but not in the aggregate sufficient to account for death. The supposition of uræmic poisoning could not be entertained in the absence of suppression or coma; so that the cause of death in this case, as in some others after removal of the kidney, must for the present be left open, in the absence of evidence of a more definite character.

At the autopsy the remaining abdominal viscera were found free from secondary growths.

M. LE DENTU reports (*Journal de Médecine de Paris*, Nov. 26, 1881) a case of urinary fistula of the left groin following incision of a large hydronephrosis, in which he extirpated the kidney, and the patient recovered. The following is an abstract of the history of the case:—

In March, 1875, M. Le Dentu was called to see a man, aged 32, who was suffering from a large fluctuating tumour of the left flank and iliac fossa. A diagnosis of hydronephrosis and perinephritic abscess was made. The severe suffering of the patient led M. Le Dentu to incise the tumour at its most superficial point, and a large quantity of clear liquid mixed with blood escaped.

After a few days the urine commenced to flow abundantly from the wound. This condition persisted, and frequently caused violent inflammatory attacks, sufficiently severe to threaten life; so the extirpation of the corresponding kidney was resolved upon.

The operation was performed on April 14th. The cortex was easily removed; the kidney was degenerated at its upper portion, and converted into a pouch-like dilatation, the lower parts being normal; the hilus was immensely dilated. The healthy portion of the kidney was surrounded by a catgut ligature, and a second placed at a convenient distance above it, the organ being removed with scissors by cutting between the two ligatures, so as to leave a sort of stump of the organ. Treatment was carried on under antiseptic precautions for a few days, until the sloughs came away; the pulse was very feeble, and ranged from 120 to 145; temperature 100⅕° to 103⅕°.

The lumbar wound progressed steadily towards cicatrization, and was completely healed at the end of two months. The inguinal fistula, which had been enlarged with the galvano-cautery, suppurated profusely for a couple of weeks, but after the first day all dribbling of urine ceased.

Cure may now be said to be complete, although a drainage-tube in the fistulous track still passes a few drops of serous pus. The urinary functions are perfect, and the patient, who is a distinguished actor, was able to resume his profession in October.

The first nephrectomy made in France was performed by M. Le Fort; the operation was unsuccessful. That of M. Dentu is the first successful case in France.

Dr. T. GAILLARD THOMAS, in the *Medical News* for January 1, 1882, records a case in which he successfully extirpated the left kidney, on account of a large fibro-cystic tumour. The patient was a female aged 21, on whom he operated for supposed ovarian tumour. One month after the operation she was fully convalescent.

Treatment of Varicocele.

Dr. R. J. **Levis** recommends the excision of the redundant scrotum as a radical cure for varicocele. The excision should embrace a portion of the anterior and inferior part of the scrotum, fixing the clamp at the raphé or median line, and drawing the integument into its grasp entirely from the affected side. The effect of making the excision at the raphé is to locate in the median line the very small linear cicatrix that remains, so that eventually all disfigurement is avoided. If made, however, in any portion of the scrotum, the rugous folds of the skin conceal it so as to be not readily observable.

The incision should always reach to the most dependent part of the scrotum, so that, if inflammation with suppuration should unfortunately follow, drainage would readily take place.

Metallic ligatures, to hold the edges of the wound in close and accurate apposition, may be placed in position before the excision is made, but it is as well to insert them after the section is completed and the guide removed; but they must always be introduced while the clamp remains in position. Interrupted sutures are inserted very near together, and, with a view to close apposition and to insure against hemorrhage, they should be not more than a quarter of an inch apart.

Dr. Levis has not seen hemorrhage follow the operation in any case. In one case there was considerable effusion of blood into the connective tissue of the scrotum, and the healing was thereby rendered more protracted.

The plan of dressing the wound is simply to cover the scrotum with a piece of lint saturated with carbolized oil or cerate of a five percentum strength. This is held in position by the ordinary pelvic and perineal bandage, the bandage being somewhat tightly applied to prevent hemorrhage, and to avoid œdematous swelling of the loose connective tissue of the scrotum. In the daily after-dressings the carbolized oil or cerate is continued, and is held in place most conveniently by an ordinary scrotal suspensory bag.—*Phila. Med. Times*, Nov. 5, 1881.

A New Method of Detecting Small Stones in the Bladder.

Dr. S. **Cuthbertson Duncan** has used for about three years the following method of detecting stone when small or in fragments. He takes a nickel-plated sound, such as is commonly used for that purpose, and holds it over the flame of an ordinary lamp or candle until the point is covered with a thin black film. After it has become quite cool, it is dipped in a solution of collodion and allowed to dry. He then oils it with castor-oil, and introduces it a short distance in the urethra and withdraws it, to see if it be injured. If not, he proceeds to explore the floor of the bladder with a sweeping lateral movement. If there be a stone or any fragments left after lithotrity, its black covering will be removed in patches, and the bright metal will show through. The author thinks this more delicate than Mr. Napier's indicator, the point of which is made of lead, blackened by chemical agents; and this very method does not impair the conducting power of the sound in any degree. A short beaked solid steel sound is preferred, with a round handle, which has a flat disk about two inches from the end, at right angles to the curve of the beak, to serve as a guide for the direction of the point. The round handle allows it to be rotated between the index-finger and thumb, the most sensitive part of the hand—two things necessary for rapid and delicate manipulation.—*Brit. Med. Journ.*, Nov. 12, 1881.

A Case of Imperforate Anus with Absence of Rectum.

Mr. G. S. ROBERTSON, of the Indian Medical Service, reports a case of a male child which was brought to the dispensary at Kheri. There was no anus nor any bulging in that region; genital organs were developed; abdomen distended, and its superficial veins prominent and congested; child very restless, and had at noon vomited fecal matter.

An incision was made where the anus should have been, and the rectum sought far as far as prudence would allow. No trace of the bowel being found, this operation was abandoned, and the descending colon laid open in the left loin by an oblique incision: no difficulties were met with. From the 10th to the 15th day after the operation some trouble was caused by prolapse of the bowel, and on the 12th day the protruded gut was much swollen and congested. The child's crying preventing its reduction, chloroform was administered, when it was put back easily enough.

On the 11th and 12th days there was some fever and restlessness, and the child refused the breast.

On the 9th of March the wound had healed up, and by its contraction prevented any protrusion of the bowel on straining or on crying. On this date the case was discharged from hospital.

A fortnight ago, five months after the operation, the child was brought for inspection. He had grown very much, and was in every respect a fine healthy infant. The artificial anus was not contracted, nor was there any trouble from prolapse of the intestine; the case was in every way successful.

This case is of interest because the best position for opening the bowel in the abdomen after failure of the ano-perineal incision may be said to be still *sub judice.*

On this point: the facility with which the loin operation can be performed, the certainty of getting hold of that part of the intestine you want, and the comparative smallness of the risk, seem to indicate it as the right procedure; but it has to be added, that statistics are against it.

Another point of interest is that the child was five days old when brought to the dispensary; that the abdomen was greatly distended, and that fecal vomiting had occurred.—*Indian Medical Gazette*, Sept 1, 1881.

A Successful Case of Simultaneous Ligature of the Subclavian and Carotid Arteries for Innominate Aneurism.

At the meeting of the Royal Medical and Chirurgical Society of London, Mr. H. W. LANGLEY BROWNE reported the following case:—

Suffering from the above disease in an advanced form, John A., aged thirty-two, was admitted into the West Bromwich Hospital on June 29th, 1881. The sac walls and coverings were thin and liable to rupture. There was a loud bruit over the swelling. The man was very weak, and suffered intense pain in the chest. On July 11th, 1881, the two arteries were tied with chromic catgut ligature, which Professor Lister had himself prepared. Antiseptic measures were used throughout. The highest temperature was 100.6°. Pulsation returned in the right temporal four days, and in the right radial nine days after ligature, and is even yet very slight at the radial. There is much less pulsation in the tumour, which has strong thick walls. There is no bruit or pain. The man feels so well, that he has already tried to work. The condition of the tumour on Oct. 28th is still one of improvement.

Mr. BARWELL congratulated the author on the great success of his case, and inquired as to the condition of the rest of the aorta and the heart, as the success or not of operations in such cases depends much on this. There are now on record 28 cases of double deligation, or rather 27 exclusively of Hobart's and Rossi's—of these 9 died within fifteen days; 7 lived various periods under six months, the shortest time being two months and a half; 9 have lived over a year; shortest, fourteen months; and longest (Heath), seven years and seventeen days. Most of the cases which have died have been examined after death, and in the first category are 3 cases which died from troubles due to the ligature; in one from secondary hemorrhage, another from exhaustion, and the third from ether administration. Of the second category, those who died earliest had extensive atheroma of the aorta; one living fourteen months had a second aneurism of the descending aorta. Three cases were still living—viz., Stevenson's, Wyeth's, and Langley Browne's. On these data some conclusions may be come to as to the contra-indications for operation. Dilated aorta caused death from suppuration of the sac or its rupture, or exhaustion, which really meant disordered circulation. Tying two such vessels close to the aorta must tend to considerable increase of tension in the rest of the aorta. When the aorta is already dilated as well as atheromatous, the double distal deligation may be followed by rapid death; when atheromatous and not dilated, other disturbances of circulation ensue. When also a large aneurism involves the first and second divisions of the aorta, the heart is hypertrophied, and there is also generally aortic incompetence. Before operating the absence of such cardiac and aortic conditions should be determined.

Mr. HOLMES thought it almost a pity to publish these cases so early; it is very difficult to see how much benefit depends on the result of distal deligation, and how much on rest in bed. The danger of rupture which appeared imminent may have passed away, but it was a misnomer to call it a "successful" case. If it was meant by "successful" that the aneurism is cured, and there is no danger of its growing again, there is no proof in this record, only a marked improvement. He was not aware that any surgeon operated in any such case knowingly in presence of heart and aortic diseases. If there be cardiac hypertrophy or aortic disease, he is rash who would then operate. The difficulty is to know when the aorta is dilated and atheromatous; there are very few cases in which they are not so, but the signs are not certain. Mr. Holmes doubted very much whether Hobart ever tied the subclavian; it would have been very remarkable if there had been any anatomical evidence that the first part of the subclavian had been tied, but this evidence was wanting, the part being destroyed by the post-mortem. Rossi's case is variously related. In commencing this operation one should not indulge in too sanguine expectations. He had never seen a case actually cured —*i. e.*, delivered from the disease—although he had seen much benefit derived in many cases.

Mr. HEATH agreed with Mr. Holmes as to the difficulty in diagnosing an aneurism of the innominate from one of the aorta; in this case, eighteen years ago, it turned out to be aortic. In most of the cases in Whyte's tables the aneurism was of innominate and aorta, and in some of aorta alone; there was really no positive test, and it is a pity that the case should be brought forward so early. There is a preparation which shows such aneurism perfectly cured. If it be right that no operation should be done in presence of atheroma, as Mr. Barwell had said, how could he justify his operation of double ligature in aortic aneurism, and yet in some of these cases life had been prolonged.

Mr. Barwell said he had stated "extensively" atheromatous as a contra-indication.

Mr. Heath thought a large aortic aneurism must be certainly atheromatous.

Mr. Langley Browne, in reply, said, so far as he could make out, the heart was sound, but he could not speak with certainty about the aorta. He was hoping from the history that the aneurism was chiefly traumatic, and that atheroma at his age might be absent. The test of its being innominate was based on that given by Wardrop—viz., by its commencing nearer the trachea and sterno-mastoids—and it was altogether formed in six months. It is a case of successful ligature of the subclavian and carotid, in the sense that a herniotomy may be successful without at the same time radically curing the disease. So far as a cure of the disease goes, it is, of course, too early to speak. The chromic gut was used in the operation. Eight years ago he had tied the common carotid for a carotid aneurism with carbolic gut ligature, which gave way in a few days, with return of pulsation, but eventually recovery, and the patient still lives. In another case he applied the carbolic ligature to the femoral; it also gave way, and amputation had to be performed. No trace of the ligature remained. In the present case no ligature was left, but it held firmly for a longer time than the carbolized gut.—*Lancet*, Nov. 12, 1881.

Nerve-stretching.

The surgery of the nervous system continues to form the subject of numerous communications to medical journals both at home and abroad. In No. 38 of the *Centralblatt für Chirurgie*, we find an account by Holl, of Vienna, of two methods of cutting down upon the buccal nerve and excising a portion of it, in order to relieve a neuralgia of that part of the face which it supplies. He records three cases by Michel, Schuh, and Billroth, in which the nerve was reached by an incision through the cheek along the anterior border of the masseter. The author draws attention to the fact that in this way the main trunk of the nerve cannot be reached, and that, in order to do this, it should be sought from the interior of the mouth. He gives directions for performing this operation as follows: If the mouth be widely opened, a groove is seen running near the anterior border of the internal pterygoid muscle, from the depression behind the tuberosity of the upper jaw, which portion of bone can be felt beneath the mucous membrane, to the last lower molar tooth. An incision in the line of this groove through mucous membrane and some glands leads to the nerve; it is only necessary to free it from some surrounding fat, to enable the surgeon to remove a portion of it one or two centimetres long. He adds that the feasibility, and, indeed, ease of performance, of the operation has not only been demonstrated on the dead subject, but upon the living, it having been actually performed by A. Wolfler in Billroth's clinique. Cases of neuralgia of the buccal nerve are not, we imagine, common, but if one were met with, the suggested operation seems a rational one. In the same number we find a paper by M. Benedikt, recounting three cases of stretching of the great sciatic nerve for locomotor ataxy, and one of the facial in a case of long-standing paralysis with secondary *tic spasmodique.* The ataxic cases were all remarkably improved, not only as regards the pains and other disturbances of sensation, but also in respect of the ataxy, paralysis of the bladder, and even amblyopia. It is mortifying to observe that the effect of this operation appears to vary so widely in different cases. Those which we have ourselves seen have not yielded such brilliant results as seem to be frequently obtained by our German brethren. Is it possible that we are not in the habit of doing the actual stretching vigorously enough in this country? or is it that cases differ very much in their amenability to treatment in this way? The facial case seems to have presented considerable difficulty from the fact of the nerve being much degenerated and embedded in cicatricial tissue. The operation was, however, successfully carried out, with relief to the *tic*, and also, strange to say, a rapid improvement of the paralysis. This result is doubly remarkable, as, in all cases we have seen or read of, a very prolonged paralysis of the muscles supplied was the immediate result of the stretching. No doubt there is much still to be learned, both as to the *modus operandi* of nerve-stretching and as to the classes of cases in which it is likely to prove beneficial.—*Med. Times and Gazette*, Nov. 12, 1881.

Stretching of the Lingual Nerve for Facial Neuralgia.

At the meeting of the *Societé de Chirurgie* on Nov. 2, M. **Le Dentu** presented a patient in whom he had successfully practised stretching of the lingual nerve for neuralgia of the face with epileptiform convulsions. The pain was located in the temporal region, auricle, lower jaw, and the left side of the tongue; it had lasted for five years, but in the last few months had so increased in severity as to be insupportable. It was above all in the left side of the tongue that the pain was most acute.

M. Le Dentu had practised stretching of the lingual nerve with a view of relieving the pain in the tongue, but without the least hope of any effect whatever on the other points which were the seat of the neuralgia. After having laid bare and isolated the nerve, the top of the tongue being fixed by a thread passed through it and held by an assistant, M. Le Dentu gently raised the nerve with a small hook about 12 millimetres above the mucous membrane of the mouth, and after maintaining this degree of elongation for a few moments he allowed the nerve to regain its normal position.

M. Le Dentu, in view of the long duration of the disease, did not expect any immediate result. On the second day, however, the patient was able to sleep quietly, and thirteen days after the operation the pains had entirely ceased, not only in the tongue, but also in the temporal region, only remaining in a slight degree above the angle of the jaw. He was able to sleep and eat perfectly well. He therefore may be considered as cured, at least temporarily: it remains to be seen whether his cure will be permanent or not. M. Le Dentu added that he had previously in another case practised, with success, resection of the auriculo-temporal nerve for facial neuralgia.

M. **Polaillon** said, that three months before he had stretched the inferior dental nerve for violent neuralgia of this nerve, and the patient has been free from pain since then.

M. **Micaise** drew attention to the possibility of more or less grave accident following resection of the facial nerves, particularly after operation on the trigeminal from disturbance of the ganglion of Gasser, or, as M. Tillaux remarked, atrophic ocular troubles may follow operative interference with the superior maxillary nerve.—*L' Union Médicale*, Nov. 8, 1881.

The Diagnosis of Fracture of the Neck of the Femur.

The difficulties in the way of diagnosis of fractures of the neck of the femur when crepitus is absent, or when it is not good practice to try and find crepitus, have lead Dr. J. S. **Wight** to tabulate his measurements of twenty-one cases of such fractures. His points selected for measurements are:—

(1.) Inside measurements from the superior anterior spines of the ilium to the lower ends of the internal malleoli. (2.) Outside measurements from the superior anterior spines of the ilium to the lower ends of the external malleoli. (3.) Measurements from the tops of the great trochanters to the lower ends of the external malleoli. (4.) Measurements from the bases of the tibiæ to the lower ends of the internal malleoli. (5.) Measurements from the superior anterior spines of the ilium to a line drawn transversely in front between the tops of the great trochanters. This is the *transverse femoral line.*

The object of all these comparative measurements is to determine the possibility of original asymmetry of the two limbs, and find out, as far as possible, if the injury to the hip has caused any shortening of the limb on the injured side, so that we can infer the *probability* of there being a fracture of the femoral neck.

In the cases reported it may be noted that,

(1.) In all of the twenty-one cases recorded, there was more or less obliteration of the abdomino-femoral—or inguinal—fold on the side of the injury. This was probably due to two causes: (i.) Effusion in front of the injured femoral neck; (ii.) Contraction of the soft parts in front of the femoral neck. (2.) About one-half of the patients were examined standing up; and when the foot of the injured side was brought down to the floor, the gluteo-femoral fold on that side was seen to be lower than the gluteo-femoral fold on the uninjured side. (3.) There was out-rotation of the injured limb in all but two of the cases reported. (4.) In all the cases of impaction of the base of the femoral neck, the upper end of the femoral shaft was materially enlarged. There were probably eight such cases. (5.) In all of the cases of impaction of the top of the femoral neck into the femoral head, the upper end of the femoral shaft was not enlarged. There were probably five such cases. (6.) The other eight cases could not probably belong to either of the above classes. (7.) In all of the cases there was more or less prominence of the outside of the hip, but the gluteal region was somewhat flattened; and generally there was a fusiform enlargement of the upper part of the thigh. (8.) In 14 of the 21 cases, there was more or less asymmetry of the lower limbs. And this point is important for two reasons: First, It was determined by measuring from the tops of the great trochanters. Second, it agrees with the general fact, that about two persons out of every three have asymmetry of the lower limbs: Hence, the above measurements from the tops of the great trochanters to the external malleoli were probably correct: *Hence, such a measurement may be recommended as a valuable aid in making a diagnosis of fracture of the neck of the femur.*

It may be remarked, that a fracture of the inner half of the femoral neck could be intra-capsular, that a fracture of the outer half of the femoral neck could be intra-extra-capsular, that a fracture entirely outside of the femoral capsule could not properly be a cervical fracture, and that the fracture ordinarily called *extra-capsular of the neck of the femur* would be more appropriately called a fracture of the base of femoral neck—except in a few cases where the femoral capsule is inserted so far inward on the femoral neck as to give a sufficient space to fracture the cervical bone outside of the capsule.

In some of the cases there has been impaction of the base of the neck into the trochanteric part of the femur; in others there has been impaction of the summit of the neck—the femoral brace—into the head of the femur; and in others there has been impaction of the femoral neck into both the femoral head and the trochanters. It is generally not difficult to make a diagnosis of impaction of the femoral neck into the trochanters, on account of the usual expansion or enlargement of the trochanteric region. When certain deformities are indicated by the attitude and the measurements of an injured limb—the trochanteric expansion being absent—it may be reasonably inferred that there has been an impaction of the femoral neck into the femoral head.

From his table of measurements of the twenty-one cases the following conclusions may be drawn:—

(1.) The average shortening after fracture of the neck of the femur, as shown by the inside measurement, is about $\frac{62}{100}$ of an inch; as shown by the outside measurement, is about $\frac{55}{100}$ of an inch; and as shown by both measurements, is about one-half inch, $\frac{58}{100}$.

(2.) The greatest shortening was one inch and one-half.

(3.) The least shortening was zero. *But in that case there was an actual shortening of three-fourths of an inch.*

(4.) The average normal asymmetry of the lower limbs in the above 21 cases was $\frac{40}{100}$ of an inch.

(5.) The average shortening of the measurement from the superior anterior spine of the ilium to the transverse femoral line was about one-half inch, again showing that the top of the trochanter major is an approximately accurate point from which to measure.

(6.) In the four following cases the injured limb appeared to be shortened one-fourth of an inch by a comparison of the inside measurements.

On account of the asymmetry of the lower limbs, in Case I., there was the average shortening of one-half inch; in Case VI. there was a real shortening of three-fourths of an inch, and in Case VII. of one inch and one-fourth—in fact the injured limb was longer than the uninjured limb—and in Case XII. of three-fourths of an inch. Now, it is an important practical fact, to which especial attention should be drawn, that asymmetry of the lower limbs complicated the evidence of a diagnosis in these four cases. To neglect this point and base a diagnosis on equality of the ordinary measurements of the lower limbs might bring avoidable disaster and detriment to both the patient and the attending surgeon. Hence, it is important to consider the subject of asymmetry in making a diagnosis of fracture of the neck of the femur, because a fracture of the femoral neck may thereby be shown to be probable—and proper treatment instituted—and legal prosecution be prevented.

From the above table and from subsequent measurement it appears that a lower limb will be shortened $\frac{6}{10}$ of an inch by a fracture of its femoral neck, and that during the treatment the limb will shorten about $\frac{2}{10}$ of an inch more.

From a theoretical point of view there need be no surprise that the lower limb does not materially shorten during treatment of fracture of the femoral neck, when we remember and appreciate two plain anatomical facts: First. There are strong facial structures going from the upper end of the femoral shaft obliquely downward and inward to the obturator membrane and the arch of bone below and at the sides of the obturator foramen. These structures act as strong ligaments to prevent the femoral shaft from going materially upward after fracture of the femoral neck—and they are assisted by the contractile force of the obturator externus muscle. Second. Femoral necks that are liable to be broken are probably mostly more or less nearly at a right angle with the femoral shaft. Hence, after fracture of the femoral neck, and during the treatment, the usual absorption of broken and contused bone will be nearly in a direction at right angles to the femoral shaft, so that absorption of the femoral neck would not cause material shortening of the injured limb. And there may be noted an important mechanical and pathological condition, namely, when the femoral brace is driven into the femoral head, but very little shortening can take place, so long as the impaction holds. And the mechanical relations are such that the femoral brace is not likely to be liberated from the grasp of the femoral head, unless severe and unwarranted force is employed to find crepitus.

Dr. Wight is aware that the above conclusions in regard to consecutive shortening after fracture of the neck of the femur are not in accord with the accepted teachings of surgeons, and on this point he makes the following remarks:—

(1.) It is worthy of note that careful and systematic attempts have not been made to make comparative measurements of the length of the lower limb at the time of fracture of the femoral neck and subsequently. The teachings on this point are in the main founded on the opinions of surgeons.

(2.) The tilting of the pelvis—upward on the injured side—will make a difference of nearly one-half inch in the measurements of the lower limbs in favour of the limb whose femoral neck has been broken; *under such circumstances the surgeon makes the first measurements.* The consecutive tilting of the pelvis—downward on the injured side—will make a difference of nearly one-half inch in the measurements of the lower limbs in favour of the limb whose femoral neck has not been broken; *under such circumstances the surgeon makes the second or consecutive measurements.* In the first place, the injured limb measures comparatively too long; in the second place, the injured limb measures comparatively too short.

In no case of fracture of the femoral neck does he use force to find crepitus. He considers the other evidences of fracture—such as have been above enumerated—as sufficient to come to a practical conclusion. Nor does he give an anæsthetic to make an examination. In this connection he makes the following statements:—

(1.) Moving the outer fragment when it is in contact with the inner fragment, will generally carry the inner fragment with it, and there will be no crepitus. And when there is impaction, ordinary manipulation will not cause crepitus to be felt. Yet crepitus may at times be felt, when there is impaction of the neck of the femur.

(2.) Moving the outer fragment when it is not in contact with the inner fragment, of course will not give crepitus.

(3.) Hence, unwarrantable force will be required in order to get crepitus in many cases of fracture of the neck of the femur. And more than this—*an impacted fracture of the neck of the femur may be broken up by severe manipulation, and a patient that would have had a useful limb may be quite completely disabled for life—for an impacted fracture of the neck of the femur is the best setting of the bony fragments that the surgeon can have.*

(4.) In a suspected case of fracture of the neck of the femur, I examine all the witnesses of fracture except crepitus, and if these witnesses agree substantially, I pronounce a verdict in favour of fracture of the neck of the femur. And if there is a doubt as to the correctness of such a verdict, I give the patient the benefit of that doubt, by treating the case as if there was a fracture of the neck of the femur—and then the surgeon receives a benefit from the doubt. But if there is no fracture, the patient has had some days of needful rest, and has had a contused hip well treated.—*Proceedings of the Medical Society of Kings County*, Oct. 1881.

Excision of Callus.

In the number of the *Archives Générales* for August, 1881, Dr. DÉLEUS records a very interesting case of fracture of the left clavicle in a man, forty-two years of age, who at the same time received a fracture of two ribs on the left side, which so complicated the case that no proper apparatus could be applied to the clavicle. The fracture was in the usual seat, in the greatest convexity, and was attended with considerable displacement of the ends of the bone. Around these ends a large mass of callus developed, which two and a half months from the injury measured five centimetres from before backwards. This callus pressed upon the subclavian artery and brachial plexus of nerves, as was shown by weakening of the radial pulse, and wasting and loss of power in the whole upper extremity, with a sense of formication. By subperiosteal resection about eight centimetres of the bone and callus were removed. The radial pulse at once returned to the normal in size and force. Electrical treatment was applied to the limb and nerves in the posterior triangle, and was attended with a gradual return to power and bulk. After three months the strength of the left arm nearly equalled that of the right, but abduction and adduction of the arm were not quite so free as on the sound side. The operation is a novel one, and not lightly to be resorted to. It is well known that large masses of callus become absorbed, but in this case the displacement of the fragments seems to have been so great and entirely uncorrected by treatment that a large mass of bone was of necessity formed to unite them together. Under these circumstances, and when it was made perfectly clear that nature unaided was insufficient for the task, the operation was justifiable. It is remarkable that there were not greater signs of venous obstruction from compression of the subclavian vein.—*Lancet*, Nov. 19, 1881.

OPHTHALMOLOGY AND OTOLOGY.

Treatment of Gonorrhœal Conjunctivitis by Division of the External Commissure and Fixed Eversion of the Lower Lid.

In a severe case of this disease, in which one eye was already lost through corneal suppuration, and the other was in a state of acute inflammation, with great chemosis and swelling of the lids, and turbidity of the cornea, Dr. **Fuchs** proceeded as follows (*Centralb. für die Prakt. Augenheilk.*, July, 1881). The outer commissure was freely divided, so as to completely relax the eyelids; a loop of thread was passed through the lower eyelid, and brought out and fastened far down on the cheek by Gaillard's method, so as to cause complete ectropion of the lower lid; iced compresses and frequent cleansings were ordered. The cornea was perfectly clear on the fifth day; cure was effected; the incision through the commissure resulted in a fine linear cicatrix. In a second case, in which, likewise, turbidity of the cornea had already appeared, complete cure was effected by the same measures. By this proceeding, the author alleges that he obtains the advantages which Mr. Critchett has achieved by bisecting the upper eyelid, without the danger of subsequent deformity which he believes to attend the latter operation. The advantages gained are diminution of the pressure of the lids, increased ease of egress for the purulent secretion, ready access to the inner surface of the lids for cleansing purposes, and free escape of blood from the incised commissure.—*London Med. Rec.*, Nov. 15, 1881.

Effects of Dynamic Electricity on Opacities of the Vitreous Body.

In order to appreciate the therapeutic value of the more or less prolonged use of the constant current in opacities of the vitreous body, M. **Giraud-Teulon** began by first examining the different anatomical peculiarities of these alterations.

The opacities of the vitreous body result from the proliferation of its own tissue cells, and the different forms under which these opacities appear correspond to different degrees of activity of the proliferation; so we may have the hypertrophic form, or in a case of marked activity the suppurative form; or when the process is very languid changes of an atrophic nature may be produced. Many different causes may act as the starting point of these changes. With M. Boucheron, M. Giraud-Teulon is of the opinion that, as an acute glaucoma shows us, there can exist a pronounced opacity in the vitreous body without any important change in its tissue; and that cases of rapid cure of affections of the vitreous body by the continuous current probably belong to this class, that is, they are not associated with any profound structural alteration.

In conclusion, however, M. Giraud-Teulon believes that in all instances of opacity of the vitreous body, whatever may be its degree or extent, provided it has not reached a form of marked hypertrophy, the continued constant current should be considered as the most efficacious therapeutic measure, and one which is followed by the most rapid results.—*Bull. Gén. de Therapeutique*, Nov. 15, 1881.

Nerve-Stretching applied to Ophthalmic Surgery.

Dr. WECKER (*Klin. Monatsb. für Augenheilk.*, June, 1881) hopes that the process of nerve-stretching, introduced into general surgery with such astonishingly good results by Professor Nussbaum, may be turned to account also in ophthalmic surgery. Having studied the relations of the optic nerve in the dead subject with regard to the mode in which it may most readily be stretched, he operated on the living as follows. The lids being widely separated, the conjunctiva is divided to an extent of two centimetres in a tangent to the inner corneal margin; the subconjunctival tissue is freely separated; the tendon of the internal rectus is taken up on a hook, carefully divided, and secured by means of a suture passed through it. Tenon's capsule is separated from the globe by means of a blunt splatula as far back as the insertion of the optic nerve; then, while the cornea is rotated outwards by means of fixation forceps, the optic nerve is secured by a strong strabismus-hook, and forcibly pulled forwards towards the front of the orbit. The traction must be tolerably energetic, and must enable the operator to reach the insertion of the nerve with his finger. The hook is then withdrawn, the divided tendon is secured to the conjunctiva by the suture already introduced, and an antiseptic dressing applied. The operation has been performed as yet only on blind eyes, the object being to ascertain its influence on the nerve-centres, and the extent to which "hallucinations, pain, and so forth," can be lessened by it. The results are to be communicated later.—*London Med. Rec.*, Nov. 15, 1881.

MIDWIFERY AND GYNÆCOLOGY.

Uterine Contractions Produced by Electricity.

From a series of observations made on the subject by Dr. PAUL HELOT, the following conclusions are drawn:—

1st. The uterus, under the influence of electric currents, shows evident contractions, not only during pregnancy and immediately after parturition, but also during the non-gravid condition.

2d. These contractions can be rendered visible in certain pathological conditions, where a plug of mucus in the cervix causes the retention of the uterine secretions. During contraction this *index* can be seen to advance and again to regain its former position on the cessation of the contraction.

3d. These contractions can be produced by a Faradic current when the interruptions are very rapid, but this method is painful, and should be confined to the treatment of post-partum hemorrhage.

4th. Galvanization by the interruption of a constant current is the most favourable means of producing contractions, because it causes only slight pain, and because to the mechanical action there is added the electrolytic action of the battery.

5th. The maximum useful result is produced with a current of 25 to 30 milliwebers, rapidly interrupted each second, and only applied for a short space of time.—*Annales de Gynecologie*, Nov. 1881.

Delivery through the Perineum.

Mr. Robert W. Harley, at a late meeting of the Dublin Obstetrical Society (*Dublin Med. Journal*, Sept. 1880), reported the case of a patient 25 years of age, of small make, whose husband complained of difficulty of having connection with her on account of a very flat and low pubic bone, to which he attributed the accident about to be described.

On Feb. 27th Mr. Harley was urgently summoned to her as labour was setting in. On examination he found the os fully dilated and the head very low down. While examining her a strong expulsive pain came on, rapidly followed by others; the rectum was distended, and the perineum rapidly thinned. All the force seemed directed backwards, and during one of these pains, and while he was endeavouring to direct the head forward, the extreme force of the uterine action meeting with the low pubic bone as a resisting force, which prevented the sweep forward, drove the head right through the perineum in its posterior third. Delivery was rapidly completed through the rent, and the placenta followed through the same opening. There was about an inch wide of perineum in front, and the laceration extended backwards till it reached the sphincter ani, but did not injure it. The parts were brought into apposition by sutures, and the perineum subsequently perfectly healed.

This accident is fortunately of very rare occurrence. Dr. Ramsbotham saw only four cases in his large experience. He calls it "Bursting through the Perineum;" in three of the cases mentioned by him it was, unlike mine, the result of long-continued labour, and rigidity of the perineum, in the other case it was due to the giving way of an old cicatrix, the result of a slough. Dr. Churchill evidently never met with this form of injury. In speaking of it he says it has been mentioned by various authors, whose names he quotes, and he adds, "a case occurred in this city." Dr. Kidd has never seen it. Dr. J. C. Reeve, of Dayton, Ohio, has recently reported a case occurring in a woman aged thirty-three, on her third delivery, and he "claims" that this is the only case on record occurring in a multipara, but he errs in that, as Dr. Ramsbotham's fourth case was on the birth of her second child, the cicatrix being the result of a slough of the vagina, after the birth of her first. He (Dr. Reeve) has collected a list of thirty-five cases of this accident, and he has ransacked all the literature of all the continents to procure them. He describes his case as one of "precipitate labour" a most appropriate designation. He says the woman was out of her bed, over the vessel, when she was taken with a violent pain, and had scarcely time to get back on the bed before the child was born. She was not aware for three days that anything was wrong. The rent began on the right side, near the junction of the upper fourth with the lower three-fourths of the labium, followed the outer boundary of the labium downwards, and crossed the perineum to the rectum; both the anal sphincters were divided, the laceration extending upwards, quite an inch and a half. The part of the perineum remaining intact at the posterior commissure, and along the lower part of the right labium, was about the thickness of a man's thumb. Dr. Reeve subsequently employed the deep operation for the cure of this, and almost succeeded, a slight fistula only remaining, when he lost sight of the case. She had only a midwife in attendance at the labour.

Dr. Roe suggested to Mr. Harley that if he had divided the perineum at each side in the line of the labia, verging towards the centre, there would have been no such accident, and the incised wounds would have healed rapidly, being kept in apposition by the natural folding of the parts; and Dr. Harley finds that Dr. White, of Buffalo, has also recommended this course; but in the case related it was so sudden and so unexpected, and the labour was so "precipitate," Dr. Harley was quite unprepared to think of any measure for averting it. In the case reported by Ramsbotham no doubt the employment of these incisions would have prevented the accident, as the cause was rigidity; and long-continued pressure—pressure from within and without; he himself, in one case, pressing the perineum for two hours unceasingly. In Dr. Harley's opinion this pressure on the perineum is very injurious, and most productive of the result we wish to avoid, paralyzing its elasticity, and checking its circulation. He also believes that too much pressure on the head from behind forwards, especially if the pubis is flat or low, is very likely to produce this accident.

Dr. RUTHERFORD KIRKPATRICK said that while he was assistant at the Rotunda Hospital he saw two cases of laceration of this kind. One of the persons in whom it occurred was a young unmarried female only sixteen years of age. The child was completely expelled through the perineum. She died in two or three days afterwards of sloughing and puerperal fever. The other case was that of a woman, about thirty-five years of age, also unmarried; it was her first child. The head was presenting with the face towards the pubis; the perineum was distended, and a central perforation took place. The child, a very large one, was expelled through the perineum, leaving the anterior part intact, and not injuring the sphincter of the anus. The woman remained in hospital for some months, and by treatment and cleanliness the wound was healed so completely that no mark of the rupture remained. No sloughing took place. The sacrum was rather straight, and that was said to have been the cause of the laceration. In neither of these cases was any operation of stitching performed, either at the time or subsequently.

Dr. MORE-MADDEN said the accident is one of the rarest occurrences in midwifery practice. In the only case of central laceration of the perineum which he saw when he was assistant in the Rotunda, the patient was brought in with the arm of the child protruding through the perineum, midway between the fourchette and the sphincter ani. Dr. Harley has said that lacerations of this part may, in some cases, be obviated by incising the perineum bilaterally, as has been suggested by Dr. Roe. Dr. Madden should be very sorry to deprive Dr. Roe of any of the credit which is due to him for the many valuable practical suggestions for which we are indebted to his ingenuity, but at the same time he may mention, that upwards of a hundred years ago Sir Fielding Ould recommended the incision of the perineum with a pair of probe-pointed scissors, to prevent these lacerations; and he has himself, for many years, practised a somewhat similar procedure in suitable cases. But previously to that Dr. Beatty had also called attention to the prevention of lacerations by a perineal incision. Dr. Roe, however, has proved the superiority of the *bilateral* incision of the perineum for this purpose, and Dr. Harley can bear testimony to the fact that we may very often succeed in preventing these lacerations by making an incision at right angles to the threatened rent.

Rupture of the Uterus successfully treated by Drainage.

Two cases in which this usually fatal accident was successfully treated by drainage, are reported in a recent number of the *Centralblatt für Gynäkologie* (1880, No. 26). One is reported by Dr. MORSBACH. The patient was aged thirty-five, and had had four children, the last five years previously. Labour came on at full term. When vigorous pains had lasted five hours, the midwife ruptured the membranes. After this, the patient, who had till then been standing, felt herself obliged to lie down; and the pains ceased. Three powders, obtained from a chemist, were given to bring on pains, without effect. Ten hours after the rupture of the membranes, Dr. Morsbach saw the patient. The os uteri was about eight centimetres in diameter, and the feet could be felt presenting, but high up. A dose of ergot was given, without effect. The patient was then narcotized, and it was discovered that there was a rupture of the vagina and cervix uteri, and that the child was in the abdominal cavity, except one foot, which was within the uterus. The foot was seized, and the rent carefully enlarged by numerous small incisions with scissors, till it would allow the child to be extracted. The hand was then inserted, and the placenta, which was in the peritoneal cavity, was removed. Two thick caoutchouc drainage-tubes were put into the rent, and a pad of salicylated wool between the thighs. Slight pyrexia followed, lasting a little more than a week, with abdominal tenderness and tympanites. One drainage-tube was removed the next day, and the other on the fourth day. The patient got up on the fourteenth day. Fourteen weeks afterwards she thought herself quite well. There was then a deep fissure in the cervix posteriorly, the bottom of which could not be reached by the finger, and a cicatrix in the posterior vaginal wall. Dr. Morsbach thought it possible that the midwife may have ruptured the uterus when she thought she was only rupturing the membranes, for she admitted that she had found great difficulty in doing what she did. The other case occurred in Berlin, and is reported by Dr. M. GRAEFE. The patient was in labour with her thirteenth child. The pains continued for six hours, and then suddenly ceased. An hour afterwards she was found in a state of collapse, the face presenting, an arm down in front, and a foot behind. Incomplete rupture of the uterus was diagnosed, and the patient was removed to the hospital. When she got there it was plain that the child was in the abdominal cavity, the contracted uterus being felt in front and to the left of it. The hand was introduced, a foot seized, and the child extracted; then the placenta was removed. The uterus was found ruptured transversely, only about three fingers' breadth of its wall remaining entire. The peritoneal cavity contained much clotted blood and meconium. It was washed out with a 2½ per cent. carbolic acid solution, and then a thick drainage tube, thirty centimetres long, put into the abdominal cavity, and secured by a silk suture to the posterior commissure. A bandage was put round the abdomen, and on it an ice-bladder. During the first two days the pulse was hardly perceptible. Hiccough and vomiting were troublesome during the first five days. The temperature did not rise till after the sixth day, when she began to have evening exacerbations of fever, which continued until the beginning of the fourth week, after which the temperature remained normal. After the sixth day the parts were irrigated from one to three times daily, through the tube, with a 2½ per cent. solution of carbolic acid. The tube was removed on the thirtieth day. The patient left the hospital, well and strong, on the thirty-fifth day. Dr. Graefe remarks, that whatever be the position this treatment will ultimately take, as compared with laparotomy, in these cases, there can be no doubt of its advantages in country practice, where the necessary assistants, instruments, etc., for laparotomy often cannot be had in time to be of service. These authors were led to adopt this mode of treatment by a paper by Dr. Richard Frommel, which will be found in the *Zeitschrift für Geburtshülfe and Gynäkologie*, Bd. v., Heft ii. This author reports eight cases, seven treated by laparotomy, all of them fatal; one by drainage, which recovered.—*Med. Times and Gazette*, Oct. 22, 1881.

Porro's Operation in England.

On Oct. 21st Mr. SPENCER WELLS performed Porro's operation, or a combination of the operations of Freund and Porro, on a patient aged 37, between five and six months advanced in pregnancy, and suffering from epithelioma of the cervix uteri. This is the first case where the operation in question has been performed in England, and the first instance where malignant disease of the uterus has been the indication for operative interference. The statistics and history of Porro's operation have been discussed at length by Dr. A. R. Simpson, in the last volume of the *Journal* (vol. i., 1881, pp. 910, 956). That operation is a supra-vaginal amputation of the uterus, in addition to the Cæsarean section. Freund's operation is total excision of a cancerous uterus by abdominal section. Mr. Wells has combined the two operations. In this case, strict antiseptic precautions were used. The urine was first drawn off, and the catheter left in the bladder. The vagina was plugged with wet phenolized cotton-wool, then the abdominal incision, about eight inches long, was made; the uterus was thus exposed. The fœtal movements were active. The uterus was brought out of the wound, the upper half of which was temporarily closed by several silk sutures. By this means, the edges of the wound were kept as near together as possible; the intestines, which gave no trouble during the operation, being guarded with sponges. The left broad ligament was next transfixed by a stout silk ligature external to the ovary and below the Fallopian tube. The same proceeding was repeated on the right side. The bladder was then dissected off the uterus, the walls of which were very thin. A small rent was made into the uterine cavity during the process of separation of the bladder, the liquor amnii escaped, and the fœtus, which measured ten inches and three-quarters and weighed fourteen ounces, was extracted, and the umbilical cord divided, the placenta being left in the uterus; the fœtus only made three or four respiratory efforts. The ureters were invisible throughout the operation. After the separation of the bladder, the cancerous mass close around the os uteri was exposed. The uterus was separated by cutting through the vaginal wall around and quite close to the uterine wall; all bleeding surfaces, as they were divided, being secured by pressure-forceps. These forceps were afterwards removed, and all bleeding vessels secured by ligatures of phenolized silk. The opening from the peritoneal cavity into the vagina was closed by silk sutures, after removing the vaginal plugs of cotton-wool. The operation, from the first incision through the abdominal integuments to the tying of the last suture in the abdominal wound, lasted sixty-five minutes. Very little blood was lost. The growth around the os uteri was examined microscopically when fresh, and proved, as expected, to be an epithelioma; it formed a nodular, exuberant mass, not yet in a state of ulceration. The uterus and its appendages weighed fourteen ounces and a half, precisely half an ounce more than the fœtus. The patient suffered chiefly from sickness during the first two days after operation, but, she said, not more than after some of her previous labours. On the third day, it was observed that many women after a perfectly natural labour had more fever, and appeared to suffer more from after-pains, and presented an aspect of more severe illness, than this patient. When last heard of, on October 27th, she was progressing favourably.—*British Med. Journ.*, Oct. 29, 1881.

Excision of the Gravid Uterus with Epithelioma of the Cervix.

At a late meeting of the Royal Medical and Chirurgical Society (*Lancet*, Nov. 26, 1881), Mr. Spencer Wells reported a case in which a uterus with malignant disease of the cervix, and containing a fœtus at the sixth month, was removed through the divided abdominal wall, and the patient recovered. She was thirty-seven years old, mother of five children, six months pregnant, and her cervix uteri surrounded by a mass of epithelioma. The uterus was extirpated entirely on the 21st of October. The incision in the abdominal wall was eight inches long, the uterus was brought out through the incision, separated from the bladder after tying the main arteries on each side, the liquor amnii and fœtus removed through the anterior uterine wall, the vaginal attachments separated all round, the uterus removed, all bleeding vessels tied, and the communication between the vagina and peritoneal cavity closed by sutures. The abdominal wound was closed in the usual way. Phenol spray and all the usual antiseptic precautions were adopted. The various steps of the operation were described, and several modifications were suggested as improvements in future operations. The uterus preserved in the museum of the College of Surgeons was shown at the meeting. Total extirpation of the uterus, both by the hypogastric and vaginal methods and by a combination of the two methods, was briefly discussed. It is believed that this is the first case on record where excision of a gravid cancerous uterus has been followed by the recovery of the patient. Similar cases must be rare, but total extirpation of a cancerous uterus where pregnancy does not complicate the case will hereafter, much more frequently, become the subject of anxious consultation.

Dr. Graily Hewitt said that he shared the responsibility of advising the performance of the operation. The patient was in a lamentable state of weakness, and had not slept at night for some weeks; she had severe continuous pain in the hypogastric region. The disease had implicated the cervix uteri to a considerable extent, but was strictly limited to it; and there was a very characteristic cord of indurated tissue. With regard to operation, three courses suggested themselves: 1. Induction of premature labour and excision of the cervix; 2. Excision of the uterus and cervix; 3. Allowing the pregnancy to go on to full term. Of these, the last was dismissed as unadvisable on account of the weakness of the patient, and because the disease was making rapid progress, and it was not at all certain that delivery could be effected *per vias naturales* after two months—during which time, also, the patient would be subjected to the debilitating influence of the spreading disease. As regards the other plans, Mr. Wells expressed himself so hopeful of success by total extirpation, that the operation was advised. Even if labour had been induced, and the diseased cervix excised, the patient would have been exposed to much risk. The operation appeared to be a difficult one; the uterus was very thin, and was not easily removed from the bladder. The chief difficulty seemed to be the avoidance of the ureters. In the ordinary Porro's operation, these were more easily avoided than when the whole uterus and the cervix were removed.

Dr. W. S. Playfair said that the patient first came to him complaining of leucorrhœal discharge. He found epithelioma of the anterior part of the cervix, and advised that labour should be induced, and that the epithelioma should then be dealt with. This, however, was delayed; and the disease in the mean time made rapid progress. In such cases, complete excision unquestionably gave the best chance of recovery. But cases of pregnancy complicated with cancer were very rare; and the important question was, as to excision of cancer affecting a non-gravid uterus. He had thought much on this. As to epithelioma limited to the cervix, in ordinary circumstances, and when seen early, it could be dealt with without the risks attendant on abdominal section, by Dr. Marion Sims's method of excising and scraping away the whole of the diseased mass, and then applying chloride of zinc so as to produce a slough. He had done this in five or six cases with very satisfactory results. The operation was attended with much less risk than abdominal section, but it did not prevent the subsequent adoption of this, if necessary. On the other hand, in medullary cancer affecting the body of the uterus, abdominal section would be of the greatest importance. Accurate diagnosis, however, was a matter of extreme difficulty; and fixation of the uterus, which was the diagnostic point, itself indicated that operation was inadmissible. He had met with a case in which, when first seen, Freund's operation might have been performed; it was, however, delayed for a fortnight, within which time the uterus became fixed, and an operation could no longer be proposed with safety. He had also seen, a month ago, with Dr. Matthews Duncan, a case in a pregnant woman, in which there was severe hemorrhage, thought at the time to be, perhaps, from malignant disease. Since then, labour had come on spontaneously; and now, on again seeing the patient in consultation, he had found the disease too far advanced for operation. He believed the surgical operation to be the easiest and simplest. Great credit was due to the late Dr. Blundell for recognizing the importance of removal of the uterus, and performing the operation.

Dr. MATTHEWS DUNCAN thought that Mr. Spencer Wells's operation should cause admiration, that it was shown to be possible to extirpate safely a gravid uterus with the cervix in a state of malignant disease. But, possibility was one thing, and advisability another; and, to decide the latter, more experience was wanted. He had studied the records, at home and abroad, of operations for removal of uterine cancer. In cancer of the cervix, extending to the body of the uterus, there had been considerable success; in cancer of the supravaginal portion of the cervix, the cases had generally done well; but, in common cancer of the cervix, the operations had been very unsuccessful. Mr. Wells's operation had the advantage of being done without waiting for delivery, and of thus avoiding the intrinsic perils of labour.

Mr. KNOWSLEY THORNTON believed that, in tying the spermatic arteries, Mr. Wells had also tied the left uterine artery. If it were possible to tie off the ovaries and spermatic arteries, and then fearlessly cut down, the uterus could be readily drawn out; and there would be necessity for only a few ligatures, the abundance of which was a disadvantage in Freund's operation. The extension of the disease into the body of the uterus showed how unavailing any partial removal would have been. He had seen cases where the disease spread so rapidly that only a week elapsed before the idea of operating had to be abandoned. He thought that drainage should be employed in all such cases as those described by Mr. Wells; and he would suggest that, during the operation, the surgeon who had charge of the abdominal portion should have nothing to do with the vagina. His experience of Dr. Marion Sims's operation had not been so favourable as that of Dr. Playfair.

Mr. DORAN observed that the greatest importance must be attached to the significance of induration round the lower part of the uterus. In this case, Dr. Playfair had observed no induration; but a few weeks later, during the operation, slight hardening was detected. Examined microscopically, this hardening tissue was found infiltrated with leucocytes—a condition commonly seen in tissues adjacent to a cancerous growth, but not at first involving cancerous infection. If the growth be removed, with as much of the infiltrated portion as possible, then the leucocytic infiltration remaining behind generally disappeared. This, at least, was observed in other organs. But cancerous infection of the hardened tissue was very rapid: hence it appeared that the early detection of hardening was the indication for immediate operation, and not for the abandonment of all attempts to remove the disease.

Dr. HARRIS, of Madras, had met there with a case of cancer of the cervix uteri, in a woman aged 26, in whom he had removed, in succession, portions of the cervix and uterus, and at last excised the uterus itself *per vaginam.* The woman, however, lived only three days. He preferred the vaginal operation.

Dr. BANTOCK congratulated Mr. Wells on his success. He had operated for removal of a cancerous uterus, in circumstances of much difficulty, on a very stout woman. The uterus was readily separated from the bladder, and the ureters were easily avoided. He had been obliged to leave an opening into the vagina, and thought that the effused blood might escape by it.[1] There was, however, a considerable collection of blood in Douglas's pouch, perhaps because the opening had been closed by the intestines. It would have been better to put a drainage-tube into Douglas's pouch.

Dr. HEYWOOD SMITH said that it was important to distinguish between extension of cancer into the vaginal wall by continuity of tissue and communication of the disease from the cervix uteri to the vagina by contiguity.

Mr. SPENCER WELLS had seen Dr. Marion Sims perform his operation. He never saw a more complete sweeping away of everything like disease. The chloride of zinc produced a slough, which really was the uterus itself, for it had a piece of peritoneum attached to it. The patient died three or four months afterwards, from a return of cancer in the neighbouring parts. If the cancer were at all extensive, a satisfactory result could not be expected from Dr. Sims's method in every case. The question of infiltration of leucocytes was important, if the surgeon could tell whether an induration were merely inflammatory, or a result of the extension of cancer. Perhaps this might be made out by observing whether the induration were branny or softer. No doubt induration might exist, which would not be a bar to the operation. As regarded tying the spermatic and uterine arteries together, he thought that the distance between them was too great for this to be done; and Schröder had told him that he had found it dangerous to attempt to tie the uterine artery, there being risk of also tying the ureter. He thanked those who had most ably assisted him in the performance of the operation.—*British Med. Journal*, Nov. 26, 1881.

Extirpation of the Uterus.

The successful case which Mr. Spencer Wells brought forward at the recent meeting of the Royal Medical and Chirurgical Society, and the animated discussion which it provoked, must inevitably turn the attention of British surgeons once more to a subject compared with which ovariotomy appears as a question of minor surgery. During the meeting, reference was frequently made to the researches of OLSHAUSEN, who, in a recent number of the *Berliner Klinische Wochenschrift*, has discussed the relative merits of operating by gastrotomy or from the vagina, for total extirpation of the uterus. He bases his opinion on ten cases of his own, so that his arguments will bear the weight of a greater experience than can be claimed by any English operator. Not forgetful of the fact that it is mainly to the British surgeon, who has most successfully undertaken this operation under desperate circumstances, that surgery is indebted for the development of that department of the operative art which has made extirpation of the uterus possible, we must consider, with the attention it deserves, the

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[1] See British Medical Journal, Nov. 12, p. 789, for a full account of this operation.

personal record of Dr. Olshausen's experience. The chief dangers which beset the patient after operation are shock, hemorrhage, septicæmia, and serious damage to the ureters and other organs, through laceration or unintentional inclusion in ligatures. The hope must not yet be entertained that no operation of this kind need ever be incomplete. Few of the innumerable proposals for improving the operation by detail are of much importance. Rydygier and Billroth advocate the isolation, by careful search and dissection, of the uterine artery. Bardenheuer recommends separate transfixion of the lower segment of the broad ligament, and lays great stress upon the maintenance of warmth by artificial means, as well as on drainage of the abdominal cavity. Breisky is in favour of a preliminary separation of the vaginal wall from the uterus. Olshausen warns surgeons against attaching too great importance to Bardenheuer's successful results after drainage, and believes the practice to be prejudicial in ovariotomy, removal of pedunculated fibroids, and supravaginal amputation of the uterus; for, in such operations, it is more important to remove all sources of infection at once from the peritoneum, than to take steps for the complete escape of all subsequent secretions. He admits that conditions, with regard to drainage, are somewhat different in total extirpation of the uterus, where the vagina must, of necessity, be laid open. The results of operating through abdominal incision are not brilliant. Up to the end of 1880, 94 cases are recorded, with but 24 recoveries. Out of Olshausen's 10 cases, 4 were performed in this manner, only the first recovering; and, in this case, malignant disease recurred in five months, and death followed sixteen months later. The remaining 3 died of shock. Forty-one cases of total extirpation of the uterus from the vagina are recorded, 29 recovered, including 3 where the operation was not performed for cancer. Olshausen's 6 cases all recovered; they have already been described elsewhere. Referring to matters of detail, he recommends complete disinfection of the vagina by plugs of wool dipped in a five per cent. solution of carbolic acid, and a preliminary scooping away of soft fetid material from the seat of disease. After cutting the vaginal wall, so as to leave a wide margin to the new growth, the divided vessels must be carefully secured, and the bladder must be separated from the uterus, from below upwards, with two fingers forced between those organs; after thus separating the uterus, it is advisable to plug its cavity. The broad ligament should be secured by passing round its base a thin soft-iron wire, introduced through the canula of a strongly curved trocar; then a silk ligature is passed through the ligament laterally, external to the wire. Much judgment is required in deciding how far the ligament must be cut away on the distal side of the ligatures; if the stump slough, it matters little, provided that every care be taken to keep the vagina clean after operation; indeed, sloughing is rather advantageous if a trace of new growth be left behind. Olshausen leaves Douglas's pouch open, after freely washing it out with a two per cent. solution of carbolic acid. The sutures are removed about the seventh day; drainage need not be continued longer than eight days. It is, he repeats, in just such an operation as this that drainage is actually efficient, since, in these cases, blood and secretions come into contact with but a limited and accessible part of the peritoneal cavity; and it must be maintained as effectually as possible during the last few days before it is dispensed with, since, when the opened surfaces of peritoneum are about to close, that is just the time when the peritoneal cavity must be left free from fluids that may cause infection.

Professor Olshausen considers that the operation is only justifiable in cases of malignant growths, particularly when accompanied by prolapsus uteri. The main question before deciding on an operation is, how far the disease has progressed; enlarged glands, evidences of parametritis, and great impairment of the mobility of the uterus, manifestly contraindicate its removal. In short, the opinions of so experienced an authority as Professor Olshausen, with regard to a new operation of so great severity, may be summed up in this manner. Should the operation be undertaken, then the surgeon must act, as Lucan said that Julius Cæsar was wont to act, on the principle that nothing is done while anything remains to be done. Experience can alone teach the numberless matters of detail which must be attended to in individual cases. Still, in many instances, it is far safer, both as regards the life of the patient and the credit of the operation, to modify the principle, and to consider that nothing should be done if there be the least likelihood that anything cannot be done.—*British Med. Journal*, Nov. 26, 1881.

[In connection with this subject the reader is referred to Dr. Fenger's elaborate paper on page 17 of this JOURNAL.—ED.]

Uterine Displacements.

Dr. PAUL F. MUNDÉ gives the following resumé of his valuable paper on the treatment of uterine displacements:—

1. *Recent* displacements of any variety are the only cases which offer a fair chance of complete recovery by any of the mechanical means at our disposal.

2. Of these means, pessaries are the most convenient for temporary relief, but only in a comparatively small number of cases does permanent cure result.

3. The best curative means of support of the displaced uterus is probably the systematic and intelligent use of vaginal tampons, impregnated with a mild astringent solution.

4. Posture, while excellent as a means of relaxing the uterine supports and relieving pelvic congestion, is by its inconvenience at best but a means of temporary relief.

5. Permanent relief, *cure*, can be expected and will be obtained only when the displacement is of recent origin, especially when it has been produced by some sudden physical shock; or when the complete tissue-metamorphosis accompanying puerperal involution aids in restoring to the uterine supports and the uterus itself their original and healthy tone.

This fortunate occurrence must be looked upon as decidedly the exception, since the favouring circumstances above mentioned are but rarely met with or the displacement is seldom recognized at a sufficiently early date to permit of a perfect restoration to health.

6. The most favourable period, therefore, for the treatment of a uterine displacement or distortion with the view to a permanent cure is within one or two weeks after delivery, before the woman has left her bed.

7. The excitation of a certain amount of plastic exudation in the walls of a flexed uterus may, if kept within bounds, result in permanent straightening of the organ. This may be accomplished by rapid dilatation, or by the protracted wearing of stem-pessaries, but permanent success will at best be rare.

8. The protracted wearing of astringent vaginal tampons, introduced daily, offers for some cases of ante- and retro-displacement an excellent, and for most cases of procidentia, almost the only efficient and safe remedy for the displacement, far superior to all steadily-worn hard or soft pessaries. A procidentia of uterus or vagina may even be cured by several months of this treatment, if the affection be not of too long standing.

9. While permanent cure is only occasionally met with, so much relief is afforded by pessaries and the other mechanical supports and methods above discussed that they should in no case be discarded, unless all treatment be counterindicated.

10. Electricity, if rationally and scientifically applied for a sufficiently long

period, offers chances of cure of comparatively recent cases, which call for a more thorough and persistent trial of the method.

11. For prolapsus uteri et vaginæ, unless of quite recent origin (see tampons), an operative constriction of the vaginal canal and a restoration of the relaxed or destroyed perineum to its normal state is the only sure means of cure, and even for this affection the unfailing method remains still to be discovered.

12. The *cure* of a flexion by operative (bloody) treatment is impossible; the canal may be made comparatively straight by a division of one or the other or both lips of the cervix, but the flexed shape of the organ still remains. Only by gradually increasing elevation of the fundus by a vaginal pessary (best, Thomas's cup), after delivery, or by the protracted wearing of an intra-uterine stem, can in a small proportion of cases a permanent cure be effected.—*Amer. Journ. of Obstetrics*, Oct. 1881.

The Relation of Anteflexion of the Uterus to Dysmenorrhœa.

Dr. HERMAN read a paper with the above title at the meeting of the Obstetrical Society of London, on Oct. 5th.

The object of the paper was to inquire as to the correctness of the widely accepted theory that anteflexion causes dysmenorrhœa, by leading to narrowing or temporary occlusion of the uterine canal at the point of bending. The evidence required to prove this was of two kinds, anatomical and clinical. The anatomical was first considered. First, it had to be shown that in anteflexion the canal was bent at an angle, and that a spur of tissue projected inward and blocked up the canal, as figured diagrammatically in many works. But in four specimens of anteflexion in London museums the curve was quite gradual; there was no angle, or dilatation of the uterine cavity. Next, the author had searched in vain for any case of retention of the menstrual blood and dilatation of the uterine cavity for which no other cause than an anteflexion existed, or of a pelvic hæmatocele, dependent upon stenosis of the uterine canal from anteflexion. The clinical evidence was then discussed. The arguments in favour of the theory fell into three groups. 1. That drawn from the patient's sensations. 2. That drawn from the afferent hindrance to the passage of the uterine sound. The author gave reasons for thinking these arguments inconclusive. 3. That drawn from the frequent association of acute flexion with dysmenorrhœa. The author pointed out that before concluding from this association that the anteflexion is the cause of the dysmenorrhœa, it was necessary to know how often anteflexion occurs without functional disorder of the uterus. He quoted summarized statistics from various other observers, which showed that out of 431 women anteflexion was present in 185, and the uterus was straight and in the axis of the pelvis only in 153. He had himself examined 102 women, who had applied for treatment, not for functional disorders of the uterus, but for local contagious disorders, and in 49 of these he found the uterus markedly anteflexed. Of the 53 in whom the uterus was slightly or not at all bent, in 38 there was little or no pain at the menstrual period, and in 15 severe pain, but of the 49 in whom there was pronounced anteflexion, in 33 there was little or no pain at the menstrual period, and in 16 severe pain. So slight a difference the author thought was practically none. As to the effect of treatment, the author pointed out that dysmenorrhœa with anteflexion was often curable by rest, by vaginal pessaries, by depletion, by incision, or by dilatation of the cervix, remedies which do not straighten the uterus. Benefit following the use of intra-uterine stems might be due to their effect in dilating the canal, in stimulating the uterus, or to the preparatory treatment. In cases in which the first mentioned kinds of treatment had failed, there was no evidence that intra-uterine stems succeeded. The purport of the paper was summarized in the following propositions: 1. That there is no anatomical evidence that anteflexion causes any hindrance to the escape of menstrual fluid. 2. That there is reason to think that well-marked anteflexion is present in nearly half of all women who have not borne children. 3. That, therefore, it is to be expected that anteflexion and dysmenorrhœa would frequently coincide. 4. That dysmenorrhœa is practically as common when the uterus is straight as when it is anteflexed. 5. That painless menstruation is practically as common when the uterus is anteflexed as when it is not. 6. That when dysmenorrhœa and flexion go together, the severity of the pain bears no relation to the degree of the bending. 7. That dysmenorrhœa, associated with anteflexion, is frequently cured without straightening the uterus. 8. That there is no evidence that straightening the uterus invariably or even frequently removes dysmenorrhœa which is associated with anteflexion, and in which other methods of cure have been ineffectual. 9. That these facts show that the relation between anteflexion and dysmenorrhœa is not that of cause and effect, but merely that of coincidence.—*Lancet*, Nov. 12, 1881.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Permanganate of Potassium as an Antidote to Serpent Venom.

M. de Lacerda has recently presented to the *Académie des Sciences* the result of some experiments which tend towards establishing the value of the permanganate of potassium as an antidote for snake-venom. One or two minutes after a subcutaneous injection in a dog of the active venom of the *Bothrops*, the author injected in the same place an equal quantity of a one per cent. filtered solution of permanganate of potassium. The effects of the poison were completely removed by the second injection.

Permanganate of potassium succeeds equally well as an antidote when the poison is injected directly into a vein; out of thirty experiments, there were only two failures; and these, he thinks, can be attributed to the facts that, in the first place, the animals were badly nourished, and feeble, and very young; and in the second place, the administration of the antidote was delayed too long. In another series of cases the author injected into a vein a half Pravaz syringeful of a solution made with ten grammes of water and the poisonous product of twelve or fifteen snake bites, and a half minute later two cubic centimetres of a one per cent. permanganate of potassium solution. With the exception of some transient agitation, and sometimes cardiac acceleration, the animal, though observed for several days, showed no symptoms of poisoning.

The author has also administered the poison and then waited for characteristic symptoms before administering the antidote. At the moment when there is marked dilatation of the pupil, cardiac and respiratory disturbance, convulsions, micturition, and defecation, he injected repeated doses of from two to three cubic centimetres of potassium permanganate solution, and at the end of three to five minutes the symptoms disappear, prostration alone remaining for fifteen or twenty minutes longer, when the animals appeared perfectly normal. Other dogs in which the same quantity of poison was injected, but without the antidote, died very rapidly.

In the presence of these facts, M. de Lacerda thinks that in the permanganate of potassium we have a true antidote to serpent venom.—*Bulletin Général de Thérapeutique*, Oct. 15, 1881.

Since the appearance of the above memoir, the *Lancet*, Nov. 5, 1881, has pointed out that M. Lacerda's conclusions cannot be accepted without considerable reserve, since permanganate of potash has been before tried and found wanting. Sir Joseph Fayrer and Dr. Brunton found that its injection made little difference in the rapidity of the death of animals bitten, although it had the power of destroying the virulence of the poison if mixed with it outside the body. They also doubt the possibility of the efficiency of any chemical antidote when the poison is once circulating in the blood. It is, however, probable that antidotes, if they exist, are not equally efficacious for all serpent poisons, and the careful observations of Lacerda justify the hope that for one, at least, he has discovered an antidote which is effective.

Tobacco Poisoning.

Dr. J. M. BIGELOW reports the case of a young man who had been suddenly seized, on the street, with a convulsion, of which there was no premonition. Found him pallid; countenance pinched and contorted; pulse variable, being for a few seconds 136 to the minute, then 38, and intermittent. Heart action was very irregular, the sounds muffled and running into each other. Temperature was normal. Eyes were staring, pupils dilated. He had severe pain and distress in the left side, especially over the heart. Dyspnœa was marked; respiration sighing; hiccough; cold perspiration and great prostration. Convulsions rapidly succeeded, with great agitation of the extremities, without loss of consciousness, and at their termination, anæsthesia, especially of the left side, with uncontrollable nervous tremor. After the transit of the convulsions a cataleptic condition was observed. This passed off, and was succeeded directly by hysterical tremors, convulsive twitching of the flexor muscles of the whole body, with agonized apprehension of approaching catastrophe and death. He would clutch the arm of a by-stander and beseech him to save his life, to relieve him of the great precordial distress and threatening suffocation. Conversation or any violent motion of the attendants provoked these spasmodic sttacks.

It was learned that this was his third attack within a year. He was an excessive tobacco smoker, sometimes consuming ten cigars a day; he had begun its use at the age of twelve. He had little appetite most of the time, was pale and cadaverous, enfeebled, restless, starting in his sleep, and his disposition had become irritable. There was no family history of nervous disease; his own health, aside from this, had been good.

Morphia was given hypodermically and bromide of potassium and carbonate of ammonium internally, and in a few days iron, quinine, and strychnia: tobacco was interdicted. The latter injunction was disregarded, and four days later he had another even more violent convulsion; he then gave up tobacco, and has since been in good health.—*Med. Annals*, Nov. 1881.

In the *Revue Scientifique* for Nov. 19, 1881, there is a paper by M. THOREUS on this subject, in which attention is particularly directed to tobacco poisoning as productive of symptoms closely allied to those of angina-pectoris, particularly when the tobacco smoke is inhaled.

JEFFERSON MEDICAL COLLEGE,

PHILADELPHIA.

The Fifty-seventh Session of the Jefferson Medical College will begin on Monday, October 3d, 1881, and will continue until the end of the third week of March, 1882. Preliminary Lectures will be held from Monday, 12th of September.

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General, Descriptive, and Surgical Anatomy (Emeritus).

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Institutes and Practice of Surgery.

ELLERSLIE WALLACE, M.D.,
Obstetrics and Diseases of Women and Children.

J. M. DA COSTA, M.D.,
Practice of Medicine.

WM. H. PANCOAST, M.D.,
General, Descriptive, and Surgical Anatomy.

ROBERT E. ROGERS, M.D.,
Medical Chemistry and Toxicology.

ROBERTS BARTHOLOW, M.D., LL.D.,
Materia Medica and General Therapeutics.

HENRY C. CHAPMAN, M.D.,
Institutes of Medicine and Medical Jurisprudence

The enlargement of the College, now in progress, will enable the Faculty to perfect the present system of *Practical Laboratory Instruction*, in all the Departments. Rooms are assigned in which each Professor, with his Demonstrators, will instruct the Class, in Sections, in direct observation and hand-work in the Chemical, Pharmaceutical, Physiological, and Pathological Laboratories. Operative and Minor Surgery, and investigation of Gynæcological and Obstetric conditions on the *Cadaver*, will be taught, as also Diagnosis of Disease on the living subject.

This course of Instruction is *free of charge, but obligatory upon* candidates for the Degree, except those who are Graduates of other Colleges.

A Spring Course of Lectures is given, beginning early in April, and ending early in June. There is no additional charge for this Course to matriculates of the College, except a registration fee of five dollars; non-matriculates pay forty dollars, *thirty-five of which, however, are credited on the amount of fees paid for the ensuing Winter Course.*

CLINICAL INSTRUCTION is given *daily* at the HOSPITAL OF THE JEFFERSON MEDICAL COLLEGE throughout the year by Members of the Faculty, and by the Hospital Staff, which is constituted as follows:—

Surgeons.

JOHN H. BRINTON, M.D.,
S. W. GROSS, M.D.,
R. J. LEVIS, M.D.

Ophthalmic Surgeon.

Prof. WILLIAM THOMSON, M.D.

Aural Surgeon.

L. TURNBULL, M.D.

Physicians.

J. SOLIS-COHEN, M.D.,
JAMES C. WILSON, M.D.,
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F. H. GETCHELL, M.D.,
J. EWING MEARS, M.D.

Pathologist.

MORRIS LONGSTRETH, M.D.

FEES.

Matriculation Fee (paid once)	$5 00	Practical Anatomy	$10 00
Ticket of each Professor (7) $20	140 00	Graduation Fee	30 00

Fees for a full course of Lectures to those who have attended two full courses at other (recognized) Colleges—the matriculation fee, and $70 00
To Graduates of less than three years of such Colleges—the matriculation fee, and 50 00
To Graduates of three years, and upwards, of such Colleges—the matriculation fee only.

The Annual Announcement, giving full particulars, will be sent on application to

ELLERSLIE WALLACE, *Dean.*

Graduates who may see this notice will confer a great favor by sending to the Dean a postal card with the correct names and residences of themselves, and of other graduates in their vicinity, to whom announcements may be sent.

BELLEVUE HOSPITAL MEDICAL COLLEGE,

CITY OF NEW YORK.

SESSIONS OF 1881–82.

At and after the Session of 1881–82, *the College will return to its former requirements as regards fees and graduation; viz., those in force before the Session of* 1880–81.

The COLLEGIATE YEAR in this Institution embraces the Regular Winter Session and a Spring Session. The REGULAR SESSION will begin on Wednesday, September 21, 1881, and end about the middle of March, 1882. During this Session, in addition to four didactic lectures on every week-day except Saturday, two or three hours are daily allotted to clinical instruction. Attendance upon two regular courses of lectures is required for graduation. The SPRING SESSION consists chiefly of recitations from Text-Books. This Session begins about the middle of March, and continues until the middle of June. During this Session, daily recitations in all the departments are held by a corps of Examiners appointed by the Faculty. Short courses of lectures are given on special subjects, and regular clinics are held in the Hospital and in the College building.

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Emeritus Prof. of Obstetrics and Diseases of Women and Children, and President of the Faculty.

JAMES R. WOOD, M.D., LL.D.,
Emeritus Professor of Surgery.

FORDYCE BARKER, M.D., LL.D.,
Prof. of Clinical Midwifery and Diseases of Women.

BENJAMIN W. McCREADY, M.D.,
Emeritus Professor of Materia Medica and Therapeutics, and Professor of Clinical Medicine.

AUSTIN FLINT, M.D.,
Prof. of the Principles and Practice of Medicine, and Clinical Medicine.

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Prof. of Principles and Practice of Surgery, and Clinical Surgery.

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WILLIAM T. LUSK, M.D.,
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WILLIAM H. WELCH, M.D.,
Lecturer on Pathological Histology.

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CHARLES S. BULL, M.D.,
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FEES FOR THE REGULAR SESSION.

Fees for Tickets to all the Lectures, Clinical and Didactic	$140 00
Fees for Students who have attended two full courses at other Medical Colleges and for Graduates of less than three years' standing of other Medical Colleges	70 00
Matriculation Fee	5 00
Dissection Fee (including material for dissection)	10 00
Graduation Fee	30 00

No Fees for Lectures are required of Graduates of three years' standing, or of third-course Students who have attended their second course at the Bellevue Hospital Medical College.

FEES FOR THE SPRING SESSION.

Matriculation (Ticket valid for the following Winter)	$5 00
Recitations, Clinics and Lectures	35 00
Dissection (Ticket valid for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address Prof. Austin Flint, Jr., Secretary, Bellevue Hospital Medical College.

THE
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OF THE MEDICAL SCIENCES

FOR APRIL, 1882.

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All communications intended for insertion in the Original Department of this Journal are only received for consideration with the distinct understanding that they are sent for publication to this Journal alone, and that abstracts of them shall only appear elsewhere subsequently, and with due credit. Gentlemen favouring us with their communications are considered to be bound in honour to a strict observance of this understanding.

Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of May.

Liberal compensation is made for all articles used. Extra copies, in pamphlet form with cover, will be furnished to authors in lieu of compensation, *provided the request for them be made at the time the communication is sent* to the Editor.

The following works have been received:—

Conferencias Ginecológicas. Por José Manuel de los Rios, Doctor en Ciencias Médicas de la Universidad de Carácas. Carácas, 1881.

Recherches sur l'Épilepsie, l'Hystérie, et l'Idiotie. Par Bourneville et H. D'Olier. Paris. A. Delahaye et E. Lecrosnier, 1881.

Annali di Statistica, Serie 2d., Vol. VI.

Die Diarrhoe im ersten Kindesalter. Von Dr. Maximilian Herz, in Wien. Wien: Urban & Schwarzenberg, 1882.

Adenoma tubulati del Fegato. Per i Dottori Brigidi e Banti. Firenze, 1881.

Contribute allo Studio delle Anemie Progressive, Anemia Ganglionaie. Pel Dott. Banti. Firenze, 1881.

Die Behandlung schwer Formen von Neuralgie und Muskelrheumatismus. Von Dr. J. Schrieber. Aussee, 1881.

Ueber die Indicationen zum Ausreissen der Nasenpolypen. Von Dr. Arthur Hartmann, in Berlin, 1882.

Paralysies Spontanées du Plexus Brachial. Par le Dr. M. Lannois. Paris, 1881.

A Case of Obliteration of the Portal Vein. By Wm. Osler, M.D., M.R.C.P. London, 1881.

Visible Muscular Conditions as Expressive of States of the Brain and Nerve Centres. By Francis Warner, M.D. London, 1881.

Excision of the Tongue. By Walter Whitehead. London, 1881.

Ruptur eines Nabelbruches mit Massenhaften Gedärmvorfall. Von Dr. Carl Fieber. Wien, 1881.

Contribuzione alla Diagnosé directa e indirecta delle Cisti Ovariche. Del Prof. Pasquele Landè.

Epatile Interstiziale Cronica. Per Dott. Antonio Feroci. Napoli, 1881.

Cancer of the Breast. By Thomas William Nunn, F.R.C.S. London: J. & A. Churchill, 1882.

Hemorrhoidal Disorder. By John Gay, F.R.C.S. London: Churchill & Co., 1882.

Scrofula and its Gland Diseases. By Frederick Treves, F.R.C.S. London: Smith, Elder & Co., 1882.

Pathology of Sea-Sickness. By J. A. Irwin, M.D. London, 1881.

Etiology and Pathology of Ulcerative Endocarditis. By Wm. Osler, M.D., of Montreal. London, 1881.

Visible Muscular Conditions as Expressive of States of the Brain and Nerve Centres. By Francis Warner, M.D. London, 1882.

The Influence of Vivisection on Human Surgery. By Samson Gamgee, F.R.S.E. London, 1882.

On the Brains of Criminals. By Wm. Osler, M.D. Montreal, 1881.

Epilepsy and other Chronic Convulsive Diseases: their Causes, Symptoms, and Treatment. By W. R. Gower, M.D., F.R.C.P., Asst. Prof. of Clin. Med. in University College. London: J. & A. Churchill, 1881.

The Other Side of the Opium Question. By W. J. Moore, M.R.C.S. London: J. & A. Churchill, 1882.

Curvature of the Spine. By William Adams, F.R.C.S. Second ed. London: J. & A. Churchill, 1882.

Guy's Hospital Reports. Third Series, vol. xxv. London: J. & A. Churchill, 1881.

St. Bartholomew's Hospital Reports. Vol. xvii. 1881. London: Smith, Elder & Co., 1882.

On Cross-Legged Progression (Scissors-Legged Deformity), the Result of Double Hip Anchylosis. By R. CLEMENTS LUCAS, B.S., M.B. London, 1881.

A Treatise on Human Physiology. By JOHN C. DALTON, M.D., Prof. of Physiology in the College of Physicians and Surgeons, New York. Seventh edition. Philadelphia: Henry C. Lea's Son & Co., 1882.

Diseases of Women. BY ARTHUR W. EDIS, M.D., London, F.R.C.P., M.R C.S. Philadelphia: Henry C. Lea's Son & Co., 1882.

A System of Surgery, Theoretical and Practical, in Treatises by Various Authors. Edited by T. HOLMES, M.D. Cantab. First American, from second English edition, thoroughly revised and much enlarged. By JOHN H. PACKARD, M.D., assisted by a large corps of the most eminent American surgeons. Vol. III. Philadelphia: Henry C. Lea's Son & Co., 1882.

Human Osteology. By LUTHER HOLDEN, assisted by JAMES SHUTER, F.R.C.S. Sixth edition. Philadelphia: Presley Blakiston, 1882.

Manual of Dental Anatomy, Human and Comparative. By C. S. TOMES, M.A., F.R.S. Second edition. Philadelphia: Presley Blakiston, 1882.

Diseases of Children. By J. FORSYTH MEIGS, M.D., Physician to the Pennsylvania Hospital, and WM. PEPPER, M.D., Provost and Prof. of Clin. Med. in Univ. of Penna. Seventh edition, revised and enlarged. Philadelphia: P. Blakiston, Son & Co., 1882.

Treatment of Phthisis. By J. HILGARD TYNDALE, M.D. New York: Bermingham & Co., 1882.

The Art of Voice Production. By A. A. PATTOU. New York: G. P. Putnam's Sons, 1882.

Percussion Outlines. By E. G. CUTLER, M.D., and G. M. GARLAND, M.D. Boston: Houghton, Mifflin & Co., 1882.

A Manual of Ophthalmic Practice. By HENRY S. SCHELL, M.D., Surgeon to Wills Eye Hospital, etc. Philadelphia: D. G. Brinton, 1881.

Lectures on Electricity. By A. D. ROCKWELL, A.M., M.D. New York: Wm. Wood & Co., 1881.

Suppression of Urine. By E. P. FOWLER, M.D. New York: Wm. Wood & Co., 1881.

Diseases of the Eye. By HENRY D. NOYES, A.M., M.D., Prof. of Ophthalmology and Otology in Bellevue Hospital Med. Coll. New York: Wm. Wood & Co., 1881.

Frozen Sections of a Child. By THOMAS DWIGHT, M.D., Instructor in Anatomy in Harvard College. New York: Wm. Wood & Co., 1881.

A Study of the Tumours of the Bladder. By ALEX. W. STEIN, M.D. New York: Wm. Wood & Co., 1881.

Sympathetic Diseases of the Eye. By LUDWIG MAUNTHER, M.D., Royal Prof. in Univ. of Vienna. Translated by WARREN WEBSTER, M.D., and JAMES SPALDING, M.D. New York: Wm. Wood & Co., 1881.

Illustrations of Dissections. By GEORGE VINER ELLIS, Prof. of Anatomy in Univ. College, London, and G. H. FORD, Esq. 2 vols. New York: Wm. Wood & Co., 1882.

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Memoranda of Physiology. By HENRY ASHBY, M.D. (London). From the third English edition, with additions and corrections by an American editor. New York: Wm. Wood & Co., 1882.

Accidental Anti-Partum Hemorrhage. By E. L. PARTRIDGE, A.M., M.D. New York, 1881.

Stenosis of the Larynx, with Fibrous Adhesive Bands of the Vocal Cords, and the Galvano-Cautery in Diseases of the Naso-Pharynx. By W. H. DALY, M.D. Pittsburg, 1880.

Nasal Polyps. By W. H. DALY, Pittsburg, 1881.

A Practical Point in the Mechanical Therapeutics of Hip Disease. By A. B. JUDSON, M.D. New York, 1881.

A Modification of Lister's Antiseptic Dressing. By JAS. L. LITTLE, M.D. New York, 1881.

Dedication of the New Building and Hall of the Boston Medical Library Association, Dec. 3. Cambridge, 1881.

Obstetric and Gynæcological Literature, 1876–1880. By JAS. R. CHADWICK, M.D. Cambridge, 1881.

Two Cases of Varicocele, with Undeveloped Testicle, and a Case of Antiseptic Osteotomy of the Tibia, in which rapidly fatal Carbolic Intoxication occurred. By A. PEARCE GOULD, M.D. London, 1881.

Hygiene of the Eye. - By C. P. OLIVER, M.D. Philadelphia, 1881.

Circum-Corneal Hypertrophy of the Conjunctiva. By SWAN M. BURNETT, M.D. Washington, D. C., 1881.

Insanity, with Malarial Anæmia and Cachexia. By W. J. MICKLE, M.D. London, 1881.

Some Remarks upon National and International Sanitary Jurisprudence. By Thos. J. Turner, M.D. Boston, 1882.

Trance and Muscle Reading. By G. M. Beard, M.D. New York, 1882.

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Moral (Affective) Insanity. By C. H. Hughes, M.D. St. Louis, 1881.

Gunshot Wound of the Abdomen. By A. S. Campbell, M.D. Augusta, Ga., 1881.

Persistent Hyaloid Artery. By W. S. Little, M.D. Philadelphia, 1881.

Comparative Value of the Mydriatics. By S. D. Risley, M.D. Philadelphia, 1881.

The Obstetrical Forceps in the Production of Perineal Lacerations. By T. H. Ashby, M.D. Baltimore, 1882.

The Trance State in Inebriety. By T. D. Crothers, M.D. Hartford, Conn., 1882.

A Report of Twenty Years' Experience in the Department of Physical Education and Hygiene in Amherst College. Amherst, 1881.

On a New Method of Making Anatomical Preparations, and Preserving their Flexibility. By Roswell Park, M.D. Chicago.

Loss of Sight in Yellow Fever. By Dr. Juan Santos Fernandez. 1881.

Removal of a Cyst of the Pancreas. By N. Bozeman, New York, 1881.

Causes of Deafness among School Children. By Samuel Sexton, M.D. Washington, 1881.

Report on Diphtheria. By Franklin Stoples, M.D. Winona, 1881.

A New System of Surgical Mechanics. Mechanical Treatment of Weak Ankles and Inverted Feet. By Chas. F. Stillman, M.D. New York, 1881.

Soluble Compressed Pellets. By H. Augustus Wilson, M.D. Philadelphia, 1881.

Diseases of the Ear in Railroad Employés. By Laurence Turnbull, M.D. Philadelphia, 1881.

The Etiology and Peculiarities of Traumatic Fever. By B. A. Watson, M.D., of Jersey City. 1881.

The Presentation of the Head and Feet. By H. G. Landis, A.M., M.D. Columbus, 1882.

Transactions of the Illinois State Medical Society for 1881. Chicago, 1881.

Transactions of California State Medical Society for 1880 and 1881. Sacramento, 1881.

Transactions of the American Ophthalmological Society, 1881. Newport, 1881.

Transactions of the Medical Association of Georgia for 1881. Augusta, 1881.

Transactions of the State Medical Society of Wisconsin, 1881. Milwaukee, 1881.

Transactions of the Minnesota State Medical Society, 1881. St. Paul, 1881.

Transactions of the State Medical Society of Kansas, 1881. Atchison, 1881.

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Proceedings of the Medical Society of the County of Kings. Jan. 1882, Feb. 1882.

Proceedings of the Southern Illinois Medical Association. Jan. 1882.

Annual Report of the State Board of Health of South Carolina for 1881.

Annual Report of the Supervising Surgeon-General of the Marine Hospital Service of the United States for 1881. Washington, 1881.

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THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR APRIL 1882.

ARTICLE I.

ON FRACTURES OF THE SKULL, RESTRICTED TO THE INNER TABLE.

By JOHN A. LIDELL, A.M., M.D., of New York, late Surgeon to Bellevue Hospital, Surgeon U. S. Vols., in charge of Stanton Military General Hospital.

THE extreme dangerousness of this lesion is so obvious as to be past all controversy or denial. In the Americanized edition of *Holmes's Surgery*, the writer recently had occasion to show that cranial fractures are restricted to the inner table much oftener than has generally been supposed, and that this form of cranial injury occurs with so much frequency as to make a special description of it necessary in every large work on surgery. Researches made for other purposes since that was written have brought to my notice fresh evidence not only that my views were correct, but also that this lesion occurs with even a greater frequency than I had believed, and that it unquestionably should be assigned a prominent place among the traumatic lesions of the skull, which, although not very infrequent, are very obscure or little understood, and nearly always fatal, unless promptly treated when symptoms appear. Still, to the surgeon who is himself familiar with this lesion, and who will not overlook the phenomena which it produces, the diagnosis of it may not in all cases be impracticable, nor even very difficult; and thus it may be quite possible to save some patients whose sole injury consists of a comparatively small fracture with slight depression of the inner table of the skull, whose ill effects, if their cause be recognized in time, can readily be obviated by a surgical operation, when otherwise death is nearly certain.

I therefore propose in this article to present some additional cases, which have never appeared in a medical journal, together with a somewhat more full or thorough exposition of the subject, than treatises on surgery ordinarily will admit; and especially of the symptoms, diagnosis, and treatment.

CASE I. *Inner Table of Occipital Bone Fractured; Superior Longitudinal Sinus Punctured; Inter-meningeal Hemorrhage; Cerebral Compression; Death therefrom in thirty hours; Autopsy.*—Private A. G., Co. C, 39th Infantry, was beaten on the head with a club, in an affray at Fort Pike, La., in April, 1868. He was stunned, but soon recovered his senses, and remained conscious about an hour. After that he began to wander, and gradually became violently delirious. He had antiphlogistic treatment. Coma with muttering delirium ensued, and he died on the next day, thirty hours after injury.

Autopsy twelve hours after death. There was a large extravasation of blood between the scalp and cranium. The internal lamina of the occipital bone was splintered at its junction with the parietal bones, but the external lamina was intact. One splinter, sharp as a needle, protruded into the torcular Herophili. There was a large extravasation of blood between the hemispheres, especially on right side; in middle fossa, a clot the size of a pigeon's egg. Lateral ventricles filled with bloody serum; subarachnoid interstices contained much serum. Heart filled with dark clots; right ventricle flabby; other organs sound. (*Circular* No. 3, War Department, S. G. O., August 17, 1871, being "A Report of Surgical Cases treated in the Army of the United States, from 1865 to 1871," p. 120.)

Reports of such cases as the above are very useful, and deserve a wide publicity. In it the *proximate* cause of death was compression of the brain from extravasated blood. The *efficient* cause, however, was the laceration of a great venous sinus of the dura mater by a fragment of the inner table of the skull, which gave rise to the hemorrhage.

The interpretation of the symptoms is not difficult. The blow was not heavy enough to fracture both tables, but only the inner one. The concussion of the brain attending it was not severe, and the "stunning" soon passed away. An hour later the symptoms of cerebral irritation and of cerebral compression appeared, in consequence of the puncture of a large venous sinus by a sharp splinter of bone, with extravasation of blood upon the membranes of the brain, increased by the pulsatory movements of the brain and its membranes against the sharp splinter. Here we observe the interval of restored consciousness between the insensibility of concussion and that of compression of the brain, which was pointed out and justly dwelt upon by J. L. Petit, was distinctly marked; and had the therapeutical indication which it denoted been fulfilled by trephining the skull, extracting the splinters of the inner table, and removing the coagulated blood, the patient would, most probably, have been saved. The blow was so slight that the original injury was confined to the scalp, the inner table of the skull, and the adjacent sinus of the dura mater. On exposing the splinter of bone by an operation, and extracting it, the hemorrhage from the wounded sinus could easily have been stopped by applying a dossil of lint with light pressure, as Pott pointed out and successfully practised more than one hundred years ago.

But why was trephining not resorted to in this case? Possibly the occurrence of hemiplegia was waited for to indicate the spot where the instrument should be applied; and so the man died, when a timely performance of the operation would have afforded a good prospect of recovery. The conclusion is irresistible that in cases such as the above the coma should be combated, even when there is no hemiplegia to indicate with certainty where the extravasation lies, by incising the contused scalp where it is most prominent down to the bone, and, in the event of finding no lesion of the outer table, applying, nevertheless, the large crown of a trephine, and reapplying it, if necessary, to remove the mechanical cause of a constantly increasing coma, which otherwise must soon end in death. Even if the risks attending the operation of trephining with antiseptic precautions and after-treatment were much greater, it would still be the surgeon's duty to give his patient the benefit of this sole chance for recovery.

CASE II. *Fracture of Skull confined to Inner Table; Traumatic Epilepsy; Death three years after Injury; Autopsy.*—Private James H. B., Co. G, 20th Infantry, robust, but an inebriate, was admitted to hospital at New Orleans, La., September 12, 1868, in an epileptic fit, which occurred on the 22d. Symptoms of severe meningitis and cerebritis supervened. Notwithstanding quite active treatment he gradually sank into profound coma, and died on the 27th. It was ascertained that the patient had received a blow on the head three years previously, and ever since had been subject to epilepsy. The hospital register of the post showed that he had, at various times, been under treatment.

Autopsy fourteen hours after death. Two old cicatrices were found on the scalp; one over the posterior part of the parietal suture, about half an inch from its occipital termination, and about one inch and a half in length; the other was over the left parietal eminence, and about one inch in length; otherwise the scalp seemed whole and perfect. Under the first-mentioned cicatrix the cerebrum was found closely adherent to the dura mater, and the dura mater itself at this point, although loosely connected with the skull, was with difficulty removed; in fact, the knife had to be used to detach it for about one square inch from the surface of the hemispheres, indicating previous inflammation and adhesion; the Pacchionian bodies here were more numerous, larger, and standing prominently out from the surface; immediately below this point, and between the hemispheres, a splinter of bone was found imbedded in the falx cerebri. The cerebral substance generally, as well as the meninges, was actively congested, altered in colour, and in consistence. A preparation of the bone from this case is preserved in the Army Medical Museum (*Spec.* 5517, Sec. I.), and a wood-cut of it is presented in Circular No. 3. (*Ibid.*, p. 115.)

Was there any fracture in this case? The reporter and editor thereof both appear to have been impressed with an affirmative belief. Indeed, the old lesions of the dura mater and arachnoid, occupying a space one inch square, that were found underneath the principal cicatrix in the scalp, pretty clearly show that there was a reunited cranial fracture of limited extent, and the absence of adhesions externally indicates that this fracture was confined to the inner table.

The splinter of bone found in the falx cerebri was an osteophyte, the product of an excessive activity among the histological elements, or morphological constituents of the falx; but its formation denotes that there was an osteal lesion also present, and thus it strengthens the opinion that there was a reunited cranial fracture. The formation of this osteophyte in the fibrous tissue of the falx cerebri no doubt was strictly analogous to the formation of detached osteophytes in the connective tissue of the extremities, in proximity to fractures of the long bones.

The operation of trephining antiseptically performed and antiseptically cared for, appears just as likely to permanently relieve such cases as the above, as trephining the long bones does to remedy an analogous state of the medullary canal, wherein the operation usually proves successful.

A considerable number of cases, in which this lesion occurred, were likewise reported by our military surgeons during the late civil war. Dr. Otis, the distinguished historiographer, presents copious abstracts, admirably illustrated by four lithographic figures and fifteen wood-cuts, of twenty instances in which there was gunshot contusion of the cranium with fracture of the inner table, and very usefully devotes eighteen large quarto pages to that purpose. (*First Surgical Vol.*, pp. 141–159.) In ten of these cases the osteological specimens were sent to the Army Medical Museum, where they are now preserved, forming no doubt by far the best series of preparations to illustrate the subject that has ever been collected.

Recovery took place in but one of these twenty examples. Of it I shall make a very brief mention, for it affords some very important instruction:—

CASE III. *Gunshot Wound of Scalp, followed by Necrosis and Exfoliation of a large piece of the Right Parietal Bone; Inner Table of this fragment at one point broken and Displaced; five years afterwards Patient still living.*—A soldier, aged 18, was wounded July 14, 1864, by a conoidal musket-ball, which tore up his scalp over the occiput. On the 16th he was sent to general hospital at Fortress Monroe. On the 25th he was transferred to New York; and, on the 27th, he was admitted to the McDougall Hospital at Fort Schuyler, where he remained until August 31st. At these three hospitals his case appears not to have attracted particular attention, for the records merely announce the date of his admission and transfer with "gunshot wound of the head." On August 31st, however, he was removed to the Broad and Cherry Streets Hospital at Philadelphia, and came under the charge of Dr. H. M. Bellows, who has reported what is known of this interesting case. He stated that he had suffered from fever at Fort Schuyler, and was now supposed to be convalescing. He was feeble, anæmic, and very much emaciated. He complained of headache and of constant chilliness. Over the right branch of the lambdoidal suture there was a sore, presenting healthy granulations at the edges, with denuded bone at the bottom. A tonic regimen was prescribed, and emollient dressings were applied to the wound. For the next two months the patient steadily improved under this treatment. The wound gave little trouble, but it was obvious that the dead bone must come away before it would heal. On November 3d he was granted a fortnight's furlough. On his return, the dead bone was found to be movable; and, on the 23d, it was extracted. This fragment of necrosed bone was one inch and a half in length, and embraced the entire thickness of the skull. The dura mater beneath was normal, and through it the pulsations of the brain were distinctly perceived. The wound cicatrized without further trouble. Ultimately, the patient was discharged from the service and pensioned. On March 9, 1870, the pension-examiner reported him as totally disabled from attacks of vertigo, incapacitating him from any physical exertion. The aperture in the skull had been filled, partly by bone, partly by fibrous tissue.

The fragment of necrosed bone that was extracted is preserved in our Army Medical Museum (*Spec.* 4194, Sec. I.). It came from the posterior part of the right parietal, near the occipito-parietal suture. It measures an inch and a half in length, by a little less than an inch in breadth. The outer table is unbroken. The inner table is fractured, and the splinter is depressed about one line. A wood-cut, showing the appearance of each table, together with an official account of the case, is presented in the first surgical volume of the history of the war (pp. 149, 150).

Thus, by necrosis and exfoliation an aperture in the skull was made in the foregoing case, and the depressed piece of the inner table was successfully removed. This circumstance is, to surgeons, a most instructive feature of the case; for it directly suggests the idea that, by making an aperture in the skull with a trephine so as to remove the depressed splinter of bone in similar cases, the surgeon merely assists nature in executing her own plan of cure.

Another circumstance, of like import, which should be mentioned here, is, that in many, perhaps in all of the nineteen fatal cases reported during the civil war, the external table was found to be necrosed over the seat of fracture in the inner table, provided the patient survived the accident long enough for the evidences of necrosis to appear, as if, in these cases also, Dame Nature had commenced the same procedure for removing the depressed fragment of the inner table.

These twenty gunshot fractures of the inner table with contusions of the outer, were caused in fifteen instances by the oblique impact of musket-balls, in four instances by shell-fragments, and in one instance by a buck-shot. The blow was struck upon the parietal region in fourteen cases, upon the frontal region in four cases, and upon the occipital region in two cases.

The lesions of the inner table consisted, in a very large proportion (nearly one-half) of these twenty cases, of irregular fissures with sharp and jagged edges that were slightly depressed. In one of these instances a sliver of bone penetrated the dura mater. In another, the vitreous plate of both parietals was fractured and depressed, inasmuch as the fissure extended across the sagittal suture. In several, the vitreous or inner table was broken, and splintered, and depressed, to a considerable extent; in one it was found broken into three triangular pieces, measuring altogether one inch and a quarter in length by three-fourths of an inch in breadth, which were depressed two lines at the apex. But in several cases the fracture consisted of only one piece of the inner table, irregular in shape, measuring from one inch to one inch and a half in length, and from three-fourths of an inch to a whole inch in breadth, and depressed from one line to one-fourth of an inch or more.

The duration of life in these nineteen fatal cases of fracture of the inner table from gunshot, varied from ten to sixty-one days, the average being twenty-two days. In thirteen, the splintering of the inner table was attended with suppurative inflammation beneath the dura mater; in two, pyæmia and metastatic foci supervened; and, in four, there was encephalitis and softening of the cerebral substance. Thus, it appears that in cases where the inner table alone is fractured by gunshot the sources of danger are just the same as in cases where the external table is fissured, while the inner table is comminuted, and the sharp splinters are depressed upon or driven into the dura mater; and as they also are in cases where both tables sustain punctured fractures. In all such cases fatal inflammation of the membranes or substance of the brain will ensue, unless the offending fragments of the inner table are removed by a timely operation performed by nature herself, as happened in the case related above, or by the surgeon in imitation of nature.

But, the operation of trephining to be successful in such cases must, as as a rule, be performed early. This operation was unavailingly performed in four of these nineteen fatal cases, having been undertaken at a late period, or as a remedial measure of last resort in every instance.

To the foregoing summary of the twenty gunshot cases that are reported in the *Surgical History of the War*, must be added another case which I find reported in the same work, under "Gunshot Contusions of the Cranium;" but in which, however, the inner table also was fractured and depressed. This case belongs to a class that is probably numerous, of which, unfortunately, but few examples have been recorded, and is, therefore, of special importance. The following are its salient points:—

CASE IV. *Gunshot Contusion of Left Parietal Bone with Fracture of Inner Table; Acute Meningitis on Right Side supervened and caused Death; Autopsy; a large piece of Inner Table was found adhering to Dura Mater.*—A soldier, aged 18, was wounded at Hatcher's Run, Va., March 31, 1865, by a conoidal musket-ball, which cut the scalp and contused the left parietal bone. No osseous lesion could be detected, and the case progressed without remark until April 16th, when two or three slight convulsive paroxysms, with sopor in the intervals, occurred. Delirium, ending in coma, ensued. Spasmodic contraction of the muscles on left side of body was observed. An abscess beneath the injured scalp was opened. Notwithstanding a very active medico-chirurgical treatment, the patient died on the 30th, one month after the casualty occurred, and fourteen days after the convulsions appeared.

Autopsy about fourteen hours after death. External table of skull at wound of scalp manifestly necrosed. Inner table at same point fractured; a plate of bone about one inch in length by three-fourths of an inch in breadth was separated from the inner table and adhered to the dura mater. Underneath, the cerebral substance was softened; and, at the depth of about three-quarters of an inch, a small cerebral abscess, not larger than a small hickory-nut was found. Above, the meninges presented merely a slight pearliness. But on reflecting the dura mater from the *right*, *i. e.*, the opposite cerebral hemisphere, the arachnoid over the middle lobe was found to be acutely inflamed, presenting an abundant deposit of soft coagulable lymph. (*First Surgical Vol.*, p. 112.)

The contractions of the muscles on the left or wounded side of the body, in this case, were produced by the acute meningitis of the right side, which itself had supervened without apparent cause.

The small abscess found in the left cerebral hemisphere was due to a commotion which was imparted to the soft parenchyma of the brain by the sudden blow or impact of the missile on the skull.

In this case, as in many of the cases already mentioned, there was necrosis of the outer table at the place where it was struck by the missile; and nature apparently had likewise began to perforate the cranium in her own way.

The fragment of the inner table, however, was not necrosed, for it adhered to the dura mater, and thus was abundantly supplied with nutrient blood. In this respect the case differed widely from all the gunshot examples of this lesion that I have yet adduced. The fragment of the inner table did not become a foreign body, and did not, by its presence, excite traumatic meningitis. Had the man survived the other lesions, this fragment could have reunited. That which might have happened in this case, and probably did occur in Case II., I suspect does happen very much oftener than surgeons generally suppose. I shall hereafter present one or, perhaps, two additional examples.

No cases of fracture of the inner table of the cranium without external fracture have been noticed in the reports of the Confederate Army Medical Department now filed in the Surgeon-General's Office; two cases, however, occurred in Confederate prisoners who died in our hospitals (*Ibid.*, p. 147).

Thus, I have adduced from the *Surgical History of the War*, twenty-one instances of this lesion that were caused by the impact of gunshot missiles. In how many other cases that were reported as gunshot "Contusions of the Skull," but wherein nominal recovery occurred, or no autopsy was held, must ever remain a matter of conjecture; nevertheless, it is quite probable that there were several cases of this sort.

The following example occurred a few years ago, in private practice. It was reported by Dr. W. H. Triplett, of Woodstock, Vt. The lesion was diagnosed during life. The account of it is interesting in other respects, as well as very instructive. Although much shorter than the original, it retains, I believe, every essential particular:—

CASE V. *Inner Table of Os Frontis Fractured, the External Table remaining unbroken; Meningo-Cerebritis; Death; Autopsy.*—On the night of Oct. 24, 1872, a blacksmith, aged 45, spare built, but very athletic, was struck with a stone upon the right frontal eminence, making a clean cut through the scalp, shaped something like the letter V, down to, and exposing the bone. A piece of the pericranium, half an inch in diameter, was removed, and the surface of the bone roughened, but not fractured. He was not stunned, and went home without any inconvenience. He also went to the doctor's office to get his wound dressed. He was advised to remain quietly at home, and to live sparely for some days.

On Oct. 28 he had his wound dressed again at the doctor's office. It appeared healthy, and he made no complaint.

Oct. 29. The doctor was sent for in the evening, and found his patient in bed, exhibiting considerable constitutional disturbance; pulse 90; skin hot and dry; severe cephalalgia; and he had had several chills during the day. The wound looked healthy. An active purgative, with ipecacuanha, was given, which operated freely.

30*th*. His skin was moist and pulse normal; no cephalalgia.

31*st*. He claimed to feel comfortable, except an occasional sharp pain in the wound.

On Nov. 1 he came to the doctor's office, and entered it laughing. His face was slightly flushed, however, and he had some cephalalgia.

Nov. 2. At 5 P. M. the doctor was again sent for. He found his man sitting up near the stove with severe cerebral symptoms. His head was hot, but still he kept it near the stove as he found some ease in that position. There was severe cephalalgia, with a feeling of fulness or tension through the temples; face flushed, with profuse lachrymation; pulse 90, regular, and not very strong, but the carotids were throbbing somewhat violently. He was perfectly rational, but exceedingly desirous of sleep; said "if he did not get something to put him to sleep he should go crazy." An active cathartic was administered, and a blister applied behind the ear. A Dover's powder was also given.

3d. There was intolerance of light; pupils dilated, the right more than the left; face flushed; right eyelids red and swollen; tongue dry; pulse same as yesterday; he was very talkative, but had slept some over night; he said he was chilly, and felt best near the stove.

4th. The symptoms were worse; pulse frequent and irregular; pupils contracted; reddening and swelling of right eyelids increased; some tendency to stupor; he has cephalalgia and intolerance of light, but is quite rational and talkative, keeping his eyes shut. Wet cups were put on his temples, and a brisk cathartic was administered. An hour later he was taken with a severe rigor; fifteen grains of chloral hydrate promptly arrested it. Two hours later still he had premonitions of another rigor, but a smaller dose of chloral hydrate aborted it. After this he rapidly sank into stupor.

5th. He was aroused with difficulty, and answered questions hurriedly but intelligently; pulse intermittent, frequent, and small; mouth parched.

6th. There was decided coma; pupils insensible to light; in the evening hemiplegia of the left side appeared; during the night universal paralysis of motion and sensation occurred, the only signs of life remaining being the respiratory movements, about forty per minute, and the pulse rapid, intermittent, irregular, and difficult to count.

7th. At 6 o'clock A. M. he died, fifteen days after the injury.

Autopsy nine hours after death. On reflecting the scalp, the bruised part of the frontal bone was found to be white, as though dead, denuded of pericranium to the extent of nearly an inch, and without fracture. In removing the skull-cap several ounces of very offensive straw-coloured liquid escaped, mixed with pus and flakes of lymph. The inner table was fractured underneath the external wound, and a splinter of bone two-thirds of an inch long by one-third of an inch broad, was found depressed upon the dura mater, which had been detached over a space an inch or more in diameter. The splinter was depressed about two lines, and was covered with pus, as was the dura mater also. This membrane was discoloured and softened. There was a shallow cup-shaped depression on the surface of the anterior lobe of the right cerebral hemisphere beneath the fracture, several inches in extent, and partially filled with pus. The visceral arachnoid and the pia mater were destroyed over the surface. The whole of the right cerebral hemisphere was covered over with pus and lymph. The substance of this hemisphere was softened throughout, and the anterior lobe was pulpy. The consistence of the left hemisphere was normal.

"In view of the circumstance that the man had received little or no concussion of the brain, and, *a fortiori*, no contusion or laceration of its substance, the opinion was formed that the trouble grew out of fracture of the internal table, a prediction that the post-mortem fully verified." (*Boston Medical and Surgical Journal*, vol. 88, pp. 385–388. 1873.)

The symptoms in this case appear to have been carefully, and sometimes graphically recorded, and I have thus presented them with a view to illustrate the semeiology of this important lesion. The symptoms, too, were clearly those of traumatic inflammation of the membranes and substance of the brain, of a suppurative character, obviously caused by the sharp splinter of bone from the inner table, which pricked and scratched the dura mater as that membrane moved with each pulsation of the brain. The hemiplegia of the left side, the coma, and the general paralysis, which quickly followed one another, as the case drew to a close, were all due to a compression of the right cerebral hemisphere, that was caused by the products of this inflammation of the membranes and substance of the brain, *i. e.*, by pus, and lymph, and serum.

The portion of skull that was struck by the stone was found white, as though dead, and denuded, *i. e.*, it was necrosed. In this case, then, we again find nature endeavouring to liberate the imprisoned fragment of the inner table, as we have already seen in many other cases, thereby suggesting anew to the surgeon the propriety of trephining in similar cases.

Moreover, the diagnosis appears to have been correctly surmised during life, a circumstance which strongly testifies to the knowledge and sagacity of the medical gentlemen who were in attendance. Why, then, was no effort made to save this patient by the operation of trephining, as was done with success in the following case, and in several other instances which I shall mention in the sequel?

CASE VI. *Trephining Successfully Employed for Fracture of the Tabula Vitrea and Sub-dural Abscess.*—A man, aged 37 (*Iowa Med. Journal*, 1867, p. 34), was struck over the supra-orbital ridge, and marked symptoms of compression set in at the end of three weeks. Professor Hughes applied the trephine at the injured spot, and found fragments of the inner table of the frontal bone depressed on the dura mater, without involvement of the outer table. Upon incising the dura mater and evacuating a quantity of pus, there was an immediate return to consciousness. (*Am. Journal Med. Sciences*, July, 1873, p. 63.)

Thus, I have brought to notice twenty-five instances of this lesion, which were reported in America alone, since 1861; two cases from Circular No. 3, twenty-one cases from the *Surgical History of the War*, and two cases from private practice.

One proceeding that is often used at autopsies strongly tends to prevent the recognition of this lesion when actually present, namely, the employment of hammers and chisels in opening skulls. I have good grounds to believe that, in such cases, on finding a fracture limited to the inner table, its occurrence may be attributed to violence used in opening the cranium *post mortem*, when, in reality, due to *ante-mortem* violence; for I distinctly remember one case in which the inner table of the skull was found broken at the autopsy of a man who had a gunshot wound of the scalp with unconsciousness, and an unknown history, but, inasmuch as the sawing of the skull had been supplemented by the use of a hammer and a chisel, I could not with certainty decide that the lesion was of *ante-mortem* date. In such cases, too, small fissures of the inner table would almost certainly pass unnoticed.

This remarkable form of cranial injury was well known to our predecessors. Quesnay mentions an example which occurred in the practice of M. Soulier, of Montpelier. He also states that the writings of Valeriola and Arcæus already contain "sufficient proofs" of "the reality of this kind of fracture." He likewise refers to a case reported by Tulpius, and to another case mentioned by Borelli. (*Memoirs Roy. Acad. Surg. of France*, Syd. Soc. Trans., Obs. 19, p. 20. London, 1848.)

Paré, however, relates the first undoubted instance of this lesion which we find on record:—A cavalier of M. d'Estampe's company received, at the breach of the chateau of Hedin, a ball from an arquebuse, which struck upon his helmet over the parietal bone. The scalp was not wounded, and the helmet but slightly indented. Nevertheless, on the sixth day he died comatose; and, Paré, wishing to know the cause of death, opened his skull. The external table was found entire, but the inner table was broken into several fragments, which penetrated the membranes of the brain. (*Œuvres*, etc., t. ii. p. 22. Paris, 1840, ed. par J. F. Malgaigne.)

Garengeot next reports the following case:—M. Mery dressed a scalp wound on the middle part of the left parietal, which did not appear at first to extend down to the bone. The patient had hemorrhage from the nose, his eyes seemed bruised and much inflamed, and he also had considerable fever, accompanied by convulsive movements. All these symptoms taken together gave rise to a suspicion that the skull was fractured, and that in consequence there was an effusion upon the brain.

M. Mery made a crucial incision, and found that the pericranium was not adherent to the skull, and that the latter was of a fine vermillion-red, without any fracture. Inasmuch as the symptoms continued unchanged in spite of repeated venesections, M. Mery declared that since the pericranium was not adherent to the skull, it might have happened that the force of the blow, which had not sufficed to break the outer table, had really broken the inner table; whereupon he applied the trephine, although there was no external appearance of fracture. As soon as the disk of bone was taken out, the inner table thereof was seen to be split through its whole diameter, and consequently it was known that the fissure extended beyond the trephine hole. He removed a quantity of clotted blood effused upon the dura mater, which was almost gangrenous; and supported by the spirit of wine, and the excellent care of this great surgeon, the patient made a good recovery. (*Traité des Operations de Chirurgie* 2me. ed., t. iii., pp. 122, 123, obs. xii. Paris, 1731.)

This appears to be the first instance on record wherein the existence of this lesion was surmised during life, and, at the same time, the diagnosis was verified by an operation. There are, however, at least four additional cases on record in which the operation of trephining was performed by our predecessors with complete success. Brief abstracts of each should be presented.

La Motte relates the case of a man who was struck on the head by a stone thrown at him. He dropped senseless. After some time (*long-temps*) he recovered, but remained vertiginous, so that he could neither stand nor sit, but was obliged to lie down. The wound of the scalp was in size less than half a pea. On learning the symptoms, La Motte diagnosticated fracture of the inner table, though after careful examination, there was found no injury of the outer table, and, on consultation, he decided to apply the trephine. A fissure of the inner table, right in the middle of the removed portion or disk of bone, was found, but no fluid effusion. The vertigo, etc., immediately ceased, and the patient made a prompt and good recovery. (*Traité Comp. de Chir.*, etc., 2me. ed., t. ii., p. 305, Paris, 1832.)

Bilguer, likewise, relates that at the battle of Torgeau, 1760, Colonel Von Losseau was wounded by a small bullet on the centre of the right parietal bone, in such a manner as to leave visible neither fissure nor mark of impression nor fracture. For three days he would not consent to trephining, but on the fourth day, beginning to fall into a stupor, he permitted the operation. It was not performed in vain. Four large pieces were found to have been knocked off from the inner plate, and the trephine had to be applied three times before they could be extracted. He perfectly recovered, and afterward held a command in the army. (*Chirurgische Wahrnemungen*, p. 30. Berlin, 1763.)

Samuel Cooper met with a still more remarkable case of the same sort at Brussels, in 1815, after the battle of Waterloo:—

> "The patient had been struck by a musket-ball on the right parietal bone, which was exposed but had no appearance of fracture; as, however, the symptoms of compression were urgent, and the patient was nearly lifeless, he conceived it right to trephine the part on which the violence had acted. He had not sawn long before the external table came away in the hollow of the trephine, leaving the inner table behind, which was not only splintered, but driven at one point into the membranes and substance of the brain, more than one-half an inch. The fragments were taken out with forceps; the man instantly sat up in bed, looked around, and began to speak with the utmost rationality. It was a most extraordinary fact that this patient got up and dressed himself the same day, without leave, and never had a bad symptom afterward." (*Hennen's Military Surg.*, pp. 260, 261, Am. ed.)

Guthrie details the case of injury of the inner table without lesion of the outer table, related by Mr. Trye, of Gloucester, which was successfully treated by trephining, in 1786. Nine weeks after contusion of the right parietal, the external table being evidently dead, he applied a trephine, and found that the greater part of the inner table had been removed by absorption. There were granulations springing up. This man recovered. (*Injuries of the Head Affecting the Brain*, 4to., pp. 77, 78. London, 1842.)

Thus, I have mentioned six cases in which trephining was successfully employed to avert the consequences of this cranial lesion, and in three of them the nature of the injury was correctly surmised prior to the operation. But on the other hand, examples of this form of cranial fracture have been unsuccessfully treated with the trephine by Tulpius, by Le Dran, by Pott, and by Denonvilliers, in Europe; and by Hopkinson, Vosburgh, Fisher, and Bontecou, in America, in our Military Hospitals during the civil war; amounting in all to eight instances which I have collected, where the operation of trephining was unsuccessfully performed. It is, however, very instructive to note that in fourteen operations for this lesion there were six recoveries.

The *literature* of this variety of cranial fracture has been carefully examined by Guthrie (op. cit., pp. 73–79), and by the late and much esteemed Dr. Otis (*First Surgical Vol.*, pp. 150–159). Mr. Guthrie presents eighteen, and Dr. Otis thirty-eight examples that have been reported by European surgeons. The abstracts of these cases I shall not take space to present, but the practical lessons which they teach I shall earnestly strive to impart. When we add them to the twenty-five examples which have been reported, in recent years, by American surgeons, the total is raised to sixty-three, and we have before us for consideration a number of cases that is by no means wanting in respectability.

Etiology.—This branch of the subject has been thoroughly investigated, experimentally as well as historically, by the late Dr. Otis, who therefore stands in the front rank of all those who have spoken concerning it. He remarks as follows:—

> "For centuries it has been taught that this form of fracture took place because of the greater brittleness of the inner table, and this explanation was accepted by the leading surgical authorities until 1865, when the experimental inquiries of Mr. W. F. Teevan, of London, proved that it was erroneous, and demonstrated that the cause of this fracture was not the brittleness of the vitreous plate, and was not to be sought for in any of the reasons heretofore assigned; but that it occurred in obedience to a well-known physical law, viz., that fracture always *commences in the line of extension, not that of compression.* It can be shown, experimentally that violence applied to the inner surface of the skull may produce fracture of the external table only, without any lesion whatever of the inner, and there is at least one pathological specimen in existence illustrating this form of injury." (*Loc. cit.*, p. 157.)

The following is a brief description thereof:—

Specimen 1082^{70}, in Guy's Hospital Museum, is the calvarium of a suicide, who shot himself in the right temple with a pistol. The ball passed transversely clean through his brain, and struck the inner table of the left os frontis, where it lodged. At the point of impact there is a black mark, but no fissure nor fracture; at the corresponding point outside, however, there is a starred fissured fracture of the external table only. This specimen, then, furnishes conclusive proof that the brittleness of the inner table has but little to do with the causation of this form of cranial fracture. Mr. Teevan's explanation is, doubtless, the correct one. He aptly illustrates this variety of cranial fracture by the familiar instance of the cracking of a thin sheet of ice under pressure. Thus, fissures are often seen to occur on the under surface of the ice where there are no corresponding fissures on the upper surface; and the process of cracking or breaking always commences on the under or the distal surface. In bending a stick across the knee until it parts, it always begins to break on the side opposite to the spot where the knee is applied.

Dr. Otis also declares :—

> "I have satisfied myself by a large number of experiments of the accuracy of Mr. Teevan's conclusions. I have had no difficulty in producing by slight blows with a hammer upon the outer or inner surfaces of calvaria, fissures or stellated fractures of the outer table only, or of the inner table only. In some of my experiments, portions of the vitreous table were detached without visible injury to the outer table ; but in striking the inside of the skull, I was able to make fissures only in the outer table without injuring the inner. Dr. Beck's opinion, that fracture of the inner table of the skull alone occurs only in those parts where there is but little diplöe is erroneous. It generally occurs in cases resulting from accidents, in parts of the skull where the diplöe is abundant, and can there be more readily produced by experiment. The explanation offered in the Surgical Report of 1865, from this office [*Circular* No. 6], of the causation of this form of fracture, is imperfect. It is true that the fracture often results from a small projectile striking the cranium very obliquely, or sometimes, as Legouest suggests, from a comparatively slight blow from a body with a plane surface. But it is the degree of the force and not its direction when applied to the exterior of the skull, that is the essential point. A spent bullet, striking at right angles, may produce this fracture. If moving at a high rate of velocity, it will fracture both tables, or penetrate or perforate the skull. It is because the ball which glances, or strikes slantingly, acts with but little force at the point of impact, that it is the frequent cause of this injury. In the many cases in which I produced it experimentally, I hit the skull at right angles with moderate force, with a hammer a half inch in diameter at the face." (*Loc. cit.*, p. 158.)
>
> Mr. Teevan says :—"What is necessary is, that the bullet should not strike with much force." He adds :—"In every case in which I produced it, it was by hitting the skull at right angles with but little force. Hence the kind of violence likely to cause fracture of the internal table only, is that resulting from a small stone, spent bullet, stick, or some body acting with a slight amount of force on a limited part of the skull, merely temporarily depressing, or bending the part struck." (*Brit. and For. Med.-Chir. Rev.*, July, 1865, p. 196.)

Grima, more than one hundred years ago, correctly held that the amount of force of the impinging body must not be great :—

> "De là il suit que si le coup n'a pas tout à fait le degré de force qui seroit capable de rompre des deux tables de l'os, il peut en avoir assez pour que la lame interne, plus mince que l'externe, se fende ou se fracture en éclats, sans que celle-ci pendra continuité. Un coup de fusil reçue horizontalement, la balle ayant perdu la plus grand activité de son mouvement, sur un casque a produit cette fracture de la table interne." (*Mémoire sur les contre-coups. Courronné en* 1766. *Prix de l'Acad. Royale de Chirurgie*, t. iv., p. 257.)

The case referred to by Grima is doubtless that which was reported by Ambroise Paré, and which has already been presented to the reader.

In brief, the facts pertaining to the etiology of this lesion are : 1. When the skull is broken by a blow of any sort, except at the frontal or any other sinus, the fracture always commences in the side of the skull opposite to that which is struck. 2. The blow, in whatever way produced, must not be strong enough to break both tables.

Course and Terminations.—Concerning the consequences of cranial fractures when restricted to the inner table, Professor Stromeyer says :—

> "These inner separations remain generally undiscovered, which is, in my opinion, lucky for the patient, because thereby he escapes the danger of being trepanned. It is not assuming too much to suppose that these cases would generally result favourably if the patient was subjected sufficiently long to an antiphlogistic diet ; because the danger incurred by these cases is evidently less than

in others, where the access of air to the splintered part of the inner table takes place. For the older surgeons, who did not know the difference between subcutaneous wounds and those exposed to the atmosphere, the lesions in cases of head injuries formed a constant source of anxiety. They could not explain to themselves what would become of the secretion of the wound. We now know that when the atmosphere is excluded, and proper care is taken, the inflammatory exudation will become reduced to a minimum sufficient only to permit the healing process; while it will never become so much as to require an exit channel. One need not revert fifteen years in surgical literature to be convinced that an unfounded dread of the impossibility of an exit for the secretions of the wound were then considered proper indications for trepanning. The ample information which one of the most zealous advocates of trepanning, one who was an excellent surgeon as well as a truthful man, I mean Percival Pott, has given us in regard to the effects of trepanning, leaves no doubt as to the theory that the access of air increases suppuration. In most cases of simple contusions, in which he trephined on account of the formation of pus internally, very little pus was found at the first operation; yet the symptoms were generally aggravated, and trepanning was resorted to a second or a third time, and not until the secondary operations were great quantities of pus disclosed. Thus, as usual, one mistake brought about another, and one ill-advised use of the trephine rendered its repetition necessary. The main symptoms which seemed to demand trephining, for the majority of surgeons addicted to the trephine, consisted in the stupor or insensibility of the patient. It really requires no small degree of firmness of conviction of the danger of the trephine to see a patient, not only for days but for weeks, in a state of greater or less stupor or insensibility, without resorting to the operation, when, sometimes, complete consciousness is restored immediately by a successful elevation of the depressed bone, or the removal of extravasated blood. It is not enough to remind one that patients with typhus often remain for weeks in a still deeper stupor, and yet gradually resume the use of their mental faculties; nor is it sufficient to recall the innumerable cases where trepanning, notwithstanding the apparent success of its purpose of elevating depressed bone or of removing extravasations, did not influence the restoration of consciousness, but where this was only gradually regained by means of an antiphlogistic treatment. One must have observed as often the successful cure of head-injuries, without trepanning, to be enabled to acquire such accuracy of observation as nearly every physician possesses in regard to fever patients. Would not every one be called a miserable quack nowadays who would give a typhus patient musk, camphor, or serpentaria on account of stupor? It will not be long before no favourable estimate will be had of any surgeon who will use the trepan on account of comatose conditions alone. The campaigns of 1849 and 1850 have happily given many young surgeons the opportunity to convince themselves, with their own eyes, that one may look on a condition of semi-stupor for weeks without resorting to the trepan." (*Loc. cit.*, pp. 153, 154.)

Dr. Stromeyer's remarks, just quoted at length, would be all right enough if the occurrence of suppuration among the fracture-splinters were the main risk attending this form of cranial injury, and if cases where the inner table of the skull is broken, and its fragments are depressed upon or driven into the meninges and the substance of the brain, belonged to the same category as simple contusions of the cranial vault; for if they did, and the occurrence of suppuration among the fracture-splinters *per se* were the main risk, then the question of the admission of atmospheric air to the seat of injury by trephining or otherwise would be one of great moment. But Dr. Stromeyer is quite mistaken in regard to the nature, course, and consequences or terminations of this variety of cranial fractures, as is clearly shown by the histories of twenty-five cases of this lesion which have occurred in recent years in the practice of American surgeons, as well as by the histories of many other cases of the same sort which are also related on or referred to in the foregoing pages. *First*, as to the nature of the lesion, we learn from these histories that in very bad cases the fragments of the inner table are completely detached from their bed, and driven through the membranes of the brain, more or less deeply, into the substance of the brain ; that in other instances, while the fracture-splinters do not perforate the dura mater, they are completely detached from the surrounding bone on the one side, and separated from the dura mater on the other, whereby their supply of nutrient blood is entirely cut off, their vitality destroyed, and thus they become and so remain merely fragments of dead bone imprisoned within the cranium, and pressing in no friendly way upon the encephalon ; and that, in still other instances, the fracture-splinters consist of triangular pieces of the inner table, whose bases remain connected with the surrounding bone, while their sharp summits are depressed against the dura mater, where they prick, and scratch, and tear the fibres of that membrane with every pulsation of the brain. Surely, these lesions bear no resemblance whatever to contusions of the cranial bones, and recovery therefrom is next to impossible so long as the sharp fragments of dead broken bone are allowed to remain sticking into the brain itself or pressing against the meninges. *Secondly*, as to the course of cranial fractures limited to the inner table, the clinical histories of the cases above mentioned show that these fragments of the inner table, when permitted to remain unextracted, almost invariably excite inflammations of the membranes or substance of the brain, which are not amenable to any plan of treatment so long as the fracture-splinters which cause them continue to exert their baneful influence upon the encephalon ; that the loss of consciousness and the coma which attend the advanced stages of such cases are generally due to the products of this traumatic meningo-cerebral inflammation, and that they bear no resemblance whatever to the hebetude and stupor of typhus in respect to causation, character, and requisite treatment. *Thirdly*, as to the terminations of cranial fractures restricted to the inner table, the clinical histories of the cases above mentioned also show that this traumatic meningitis and encephalitis usually ends in speedy death, unless the causes thereof, the imprisoned fragments of the inner table, are liberated and removed by the timely performance of the operation of trephining. Out of sixty-three cases of this lesion related or referred to in the foregoing pages, but seven recovered, and six of them were saved by trephining. In only one instance did the patient get well without that operation, and in this case the broken part of the inner table consisted of but one fragment, which was of large size and but slightly depressed. Moreover, this piece of dead bone was liberated and removed by nature from its place of confinement within the skull by a proceeding closely analogous to the operation of trephining.

Thus, it is clearly proven that Stromeyer's bitter criticism of trephining, when performed for the relief of cranial fractures restricted to the inner table, is wholly unwarranted by the facts. Indeed, in preparing it, he seems to have drawn upon his "inner consciousness" for his data instead of his clinical experience, and upon his imagination instead of his surgical observation; and there are good grounds for retorting in kind and asking the following question: "Would not every one be called a miserable quack nowadays who would" rely exclusively upon antiphlogistics in the treatment of inflammations of the membrane and substance of the brain when caused by dead fragments of the inner table pressing upon the encephalon in cases of cranial fracture restricted to that table; and who would, therefore, refuse to fulfil the causal indications by extracting these pieces of dead bone by operation, lest air might get into the place of fracture? In such cases recovery without the operation is impossible, and by refusing to extract the dead fracture-splinters by the seasonable performance of trephining the patient is deprived of the sole chance of escape from an otherwise inevitable death. I have discussed Prof. Stromeyer's criticism at considerable length, not so much because it is unjust, as because it is likely to lead to erroneous practice.

Allegations, such as those made by Dr. Stromeyer and others of a similar character or tendency, if unfounded, are calculated to do immense harm, especially when allowed to go unchallenged. For that reason, I was originally lead to inquire, at the expense of considerable time and labour, into the whole subject-matter of this lesion, and to present the results to the reader in as brief a form as seemed compatible with clearness or intelligibility.

The superior longitudinal sinus was pierced by a splinter from the inner table, in the first case related above; blood was extravasated in great quantity, and, in default of an operation, death from cerebral compression ensued in thirty hours. In the following example, the middle meningeal artery was lacerated from the same cause, and death ensued in three and one-half hours :—

CASE VII. At a meeting of the Edinburgh Medico-Chirurgical Society, held on June 4, 1862, Mr. Edwards showed a preparation from a boy who had been killed by a cricket-ball. Some boys were playing one evening in a field; a cricket-ball was thrown up, and struck the deceased, a muscular lad, on the right temple. He staggered but did not lose consciousness, and complained little of pain. He came home about 8 o'clock, and soon after became sick and vomited. Mr. Edwards saw him at 9 o'clock, and ordered cold cloths to be applied to his head. Soon afterwards he became delirious, snatched off the cloths and tossed himself about; he slept occasionally, and in the intervals expressed great anxiety that the boy who had thrown the ball should not be blamed. He ceased to recognize his friends, became gradually comatose, and died three and one-half hours after he received the blow. On *post-mortem* examination, there was no bruise found on the head. On reflecting the scalp, however, there was a very scanty extravasation of blood found beneath the temporal aponeurosis on the right side. There was no fracture of the external table of the skull; but there was a slight crack which extended across the inner table. The middle meningeal artery ran in an osseous canal at this part. A small piece of bone was broken off, and the artery was completely torn across at this point. A clot, half the size of the fist, lay between the cranium and the dura mater, and the corresponding portion of brain presented a distinctly bruised appearance. (*Edinburgh Med. Journal*, vol. viii. p. 191.)

The operation of trephining, when performed in season, almost always saves such patients, especially if an antiseptic after-treatment be employed.

Concerning the final issue of this lesion Dr. Otis remarks: "It cannot be doubted that many cases of this form of injury terminate favourably, and are never recognized" (*loc. cit.*, p. 158). But he presents no clinical nor anatomical observations whatever to support this opinion. It is not improbable, however, that this view is correct; but, so far as I am informed, the only foundations for it are a few facts revealed by autopsies which I have mentioned in the fore-part of this article, and the inherent probability that mere fissures of the inner table without displacement not unfrequently occur and unite again without exciting any trouble. It is not this form of the lesion which has most interest for surgeons, but the forms in which no successful plan of relief, except timely trephining, has yet been devised, many examples whereof I have mentioned.

Diagnosis.—The cases related above clearly show that this lesion can, not unfrequently, be diagnosticated with considerable certainty prior to operation or to autopsy. But so long as the text-books in common use make no mention of this lesion, or barely state that it is very rare, just so long will it escape recognition in many cases where otherwise it would be detected without much difficulty. Bontecou, having examined some preparations of this lesion belonging to our Army Medical Museum, correctly surmised its presence in a case of gunshot scalp-wound, and verified the diagnosis by applying a trephine. Unhappily, an abscess had formed in the brain, suppuration in the diploë also had occurred, the symptoms of pyæmia had already appeared, and thus the operation, though performed as soon as evidence of compression existed, was too late to save the patient. (*Circular* No. 6, November 1, 1865.) So, too, with other surgeons.

Imprimis. This lesion is met with only in patients who have sustained some form of injury which may readily cause a cranial fracture, for instance, gunshot wounds of the scalp, blows on the head inflicted with stones, clubs, cricket-balls, etc. If, then, the phenomena usually referrible to fractures of the cranial bones appear in any case where some form of injury has been received that is apt to cause such fractures, and ocular examination shows the external table to be not broken, it is generally right to surmise that the internal table is fractured and depressed. There are two kinds of cases in which the diagnosis can be made with almost absolute certainty: 1. When, after the blow on the head, no evil consequences arise, at first, but, after the lapse of some days, the patient begins to complain of a fixed pain in the part struck, and all the symptoms of cerebro-meningeal irritation and inflammation follow, although no lesion is discernible in the outer table, as happened in Case V., related above. 2. When the patient recovers consciousness soon after the blow, but finds there is paralysis of some part of the body opposite to the side struck, and examination fails to detect any lesion of the outer table, as happened in the following instance: At the battle of Vicenza, in 1848, a soldier was struck by a shot over the right parietal bone. He instantly became unconscious and fell, but soon recovering, remarked that his left arm was perfectly paralyzed. Dr. B. Beck found the bone completely bared, but no external trace whatever of fracture. Nevertheless, he diagnosed a fracture of the inner table with depression, because the paralysis of the left upper extremity could only be explained by pressure so produced. Ice, calomel, etc., were ordered. On the eleventh day the symptoms of cerebral irritation became more severe; instruments for trephining were sent for, but, before they arrived, the man perished on the fifteenth day after the casualty. The *autopsy* showed that there was scarcely any diploë, that the inner table presented a cruciform fracture, and that there were inflammatory changes in the bone, meninges, and substance of the brain. (*New Syd. Soc. Year-Book*, 1862, p. 269.)

La Motte thought, that when the inner table alone was broken, the lesion might be detected by a peculiarity in the resonance of the skull under percussion, and cites a case illustrating this idea. (*Obs. de Chirurg.*, t. ii. p. 303.) Atthalen, of Besançon, held the same opinion, and adduced an interesting case which happened in 1746. Professor Stromeyer also attaches value to this mode of exploration. He says:—

> "By means of percussing with a silver probe, I was enabled in one case, where there was only a barely perceptible fissure in the outer table, to diagnosticate the extent of the inner separation accurately, and after the decease from pyæmia, in this same case, many of the young surgeons had the opportunity to convince themselves of the correctness of my diagnosis. Any of them who possessed a practical ear could discriminate the sounds when percussing the outer table at the point of the internal fracture, or at other parts of the cranium. At the point of the internal fracture the pitch is somewhat higher. Lanfrancus and Ambroise Paré, I find, already knew of this diagnostic expedient." (*First Surgical Vol.*, p. 153.)

Percussion of the skull with a silver probe in the way described by Stromeyer can unquestionably be employed with advantage in cases where fracture of the inner table is suspected.

But, when the surgeon is not unmindful as to the possibility of this lesion, a correct diagnosis can often be made by exclusion, as was done in a considerable number of the cases that are mentioned or referred to above.

Treatment.—Simple fissures of the inner table which re-unite without giving trouble, will not require any special treatment. But, when inflammatory symptoms arise from this lesion, they must be combated by cupping the neck, by shaving the head and applying an ice-bag, by administering purgatives and calomel, by a spare diet and absolute quietude. Should these measures fail, but, especially, should the symptoms of irritation and compression of the brain increase in spite of this treatment, trephining must be resorted to without delay. Moreover, the cases by B. Beck, Guthrie, S. Cooper, Bilguer, Garengeot, Paré, Hughes, and Triplett, as well as others that are mentioned above, very clearly show that mere medical treatment must prove ineffectual in cases where the splinters of the inner table are depressed, and that the operation of trephining affords a reasonable, as well as the only prospect of saving such patients, especially if it be seasonably employed.

When extravasation of blood upon the brain with compression thereof results, as it did in Cases I. and VII., the coagulum must be exposed without any delay by trephining, and removed, with antiseptic precautions and antiseptic after-treatment.

Article II.

Ovariotomy: Difficulties Diagnostic and Operative; Continued Menstruation after Double Ovariotomy.

By George J. Engelmann, M.D., Prof. of Obstetrics in the Post-Graduate School of the Missouri Medical College; Consulting Surgeon to the St. Louis Female Hospital, and St. Anne's Lying-in Asylum, etc.

At the recent meeting of the American Gynæcological Society in New York, in September, 1881, Dr. T. G. Thomas read a paper entitled, "Extensive Adhesions of the Bladder as a Complication of Ovariotomy;" in this valuable and instructive paper, Dr. Thomas relates some four or five cases in which he had encountered this unforeseen and trying condition, all of which resulted fatally. Fortunately this complication is not of frequent occurrence, and but few of the many experienced operators present expressed themselves as having encountered such extensive adhesions as those found by Dr. Thomas, by which the bladder was drawn up toward the umbilicus, and spread out over the anterior surface of the tumour; literature, he says, furnishes us with but seven cases of this character, in all of which a fatal issue has resulted in consequence of the adhesions, either directly from the injury done the bladder, or indirectly from failure to remove the tumour on account of their existence. The danger arising from such a condition of affairs is readily apparent, especially, if so experienced a diagnostician as Dr. Thomas tells us that it is rarely possible to detect these adhesions beforehand, and thus guard against that almost inevitable accident, the opening of the bladder; by reference to his paper it will be seen how ingeniously he has, in one or two cases, remedied the injury when done. In the discussion following it was my good fortune to be enabled to relate the successful termination of an ovariotomy thus complicated, one of the few cases of the kind on record.

My attention having been once directed to the very serious results threatened by these extensive adhesions of the bladder, in the operation of ovariotomy, I determined at some opportune time to relate this case more fully; in doing so I will also call attention to difficulties in the diagnosis of certain conditions which it is of the utmost importance to determine before engaging in an ovariotomy; conditions which unfortunately it is often impossible to overcome, notwithstanding the very clear and definite rules laid down in text-books.

I will give in detail two cases in which I have encountered these difficulties in diagnosis, and, although it appears to me that it will be almost impossible to avoid these errors, they will at least serve to caution the operator to guard against them, and not to rely too firmly upon the rules in his text-book. The difficulties I refer to are:—

1. Of determining the existence of adhesions, however firm, to yielding parts.

2. Of differentiating between tumours.

   (*a*) Uterine and ovarian.

   (*b*) Fibro-cystic and colloid.

3. Of detecting the elongation and attachment of the bladder.

The same cases will also serve to illustrate certain features which have appeared to me as of importance in the operation, and which I would emphasize, either because they are usually neglected as too insignificant, or because my practice differs therein from that usually followed. I merely propose to give a few practical hints, and by no means to map out a guide for the operator. I would urge—

1. A regard for the safety of the enlarged bladder.

2. The importance of securing deep and firm union of the abdominal incision, in order to avoid hernia in the convalescent.

3. The importance of the free use of the ligature, and of relying upon fine braided silk cut short.

4. Care in the use of carbolic acid.

5. The early operation, if an operation is at all indicated.

The two following cases will, I believe, best answer our purpose.

CASE I. *Colloid Tumour of the Right Ovary; Cystic Degeneration of the Left; Peritoneal Cysts; Extensive Adhesion of the Elongated Bladder; Double Ovariotomy; Continued Menstruation.*—Mrs. T., from Kansas City, consulted me in April, 1880, on account of failing health due to an abdominal enlargement, of less than a year's growth. The patient was 32 years of age, the mother of five children, the youngest being two and a half years old. She first menstruated in her thirteenth year, and was regular ever after, suffering no pain: her labours were easy, and recovery rapid and complete; in short, she always enjoyed excellent health, and at no time complained of backache or any abdominal pain. In the spring of 1879, one year before I was called in, she first complained of a certain lassitude, not of any particular pain, but felt weak and miserable. This slowly passed away, and in the fall she again felt perfectly well.

In September, she noticed for the first time, a certain abdominal enlargement; but being in good health, she thought herself two or three months pregnant, although her menses were still regular and even more profuse than formerly, the flow being very free and continuing for seven days instead of four as usual. She continued well, although the tumour grew rapidly until December, when she noticed a certain emaciation and a disagreeable backache; experiencing at the same time a feeling of distension in the upper part of the abdomen; but about Christmas time the swelling or tumour seemed to descend, and this distension was relieved, whilst the abdomen seemed to feel more full in its lower portion. The growth of the tumour had apparently ceased, and there was no noticeable increase since December. The patient felt comparatively well, had lost some flesh, was a little weakened, and her appetite was somewhat impaired; still, upon my first examination, she appeared to me in very fair health.

I found the abdomen distended by a smooth, semi-solid, or, if I may use the expression, soft-solid growth of, apparently, like density throughout, resembling in feel a rapidly growing fibroid; it was freely movable, and I accordingly considered it non-adherent, more especially as there was no history of peritoneal inflammation, or even peritoneal tenderness. The tumour was remarkably movable, gliding from side to side as the patient turned in bed, and being readily rolled by the hand over the projecting spine; the uterus also was movable independent of the tumour, and between both there appeared to be no connection. The upper border of the tumour was four and one-half inches above the umbilicus, and extended six or seven inches on either side. A friend, who saw the case in consultation with me a few days later, discovered a slight but distinct fluctuation about and below the navel, which I had not observed in my previous examination, as it either did not exist at the time, or had been overlooked by me; and he was accordingly disposed to consider it a fibro-cystic tumour, probably of the ovary. I looked upon the case as one favourable for operation on account of the good health of the patient and the absence of adhesions as indicated by the mobility of the tumour. She however hesitated until the rapid growth of the neoplasm, evident even to herself and friends, induced her to consent to surgical interference. The increase in size was very marked in the last ten days before the operation. She was carefully prepared, the bowels were freely moved, the urinary and cutaneous secretions stimulated, warm baths were taken daily, digestible and nourishing food—meat and milk—advised, tonics given, and large doses of quinine immediately before the operation.

Thursday, April 22, 1880, I operated, in the presence and with the assistance of Drs. Prewitt, Schenck, Engelmann Senior, Nelson, and Fischel. The urine was removed as usual, but neither was the quantity very large nor did the catheter pass beyond the ordinary depth. The room, which had been deprived of carpets, thoroughly cleaned and ventilated for the past few days, was kept at a temperature of 76° and over, and the atmosphere thoroughly saturated with moisture. Flat vessels with hot water, carbolized, were placed upon the stove and distributed about the room, and two sprays were used; one had been directed upon the couch and bedding for some time before; during the operation itself, the sprays were not directed upon the abdomen of the patient, into the open wound, but from a distance, upon the operators, more for the purpose of saturating the atmosphere with the carbolized moisture than for the purpose of operating directly under the spray, so benumbing to the hands of the operator, and, as I firmly believe, injurious to the exposed peritoneum, and dangerous to the rapidly absorbing surfaces of the numerous and freely exposed raw surfaces.

Hardly had the abdominal incision been made when our troubles began. I felt sure that I had cut through the peritoneum in the upper part of the incision, which extended as usual from the umbilicus to within three-quartres of an inch of the symphysis (I dislike to cramp myself by a small opening, and believe the danger from injury to the parts in manipulating through an unnecessarily small opening to greatly exceed that arising from a few inches more of incised tissue); but instead of cyst-wall or intestinal coils, I saw a thick, soft, purplish tissue, continuous with the abdominal wall. What was it? it appeared like the thickened wall of, perhaps, a suppurating ovarian cyst, but I thought that I had penetrated the peritoneal cavity, and this tissue was apparently a part and constituent of the abdominal wall. In the dilemma I endeavored to feel the way with my finger towards the upper angle of the incision, and separated this thickened tissue a trifle from the abdominal wall, whereupon a number of delicate whitish cysts, of the size of a hickory-nut, attached to long, slender, thread-like pedicles, slipped out from the opening as a second surprise. As small cysts are not likely to appear in the peritoneal cavity, we supposed them to be either intestinal coils or small cysts coming from the interior of a large one, and that we must have cut through a cyst wall in the first incision. Dr. Prewitt replaced them several times, and still they reappeared; then he pulled them out; the more he pulled the longer they became, and as the experiment appeared a dangerous one, they were tucked back. Later in the operation they again appeared, when I tied several of the thread-like pedicles and cut them off. As soon as I was enabled to insert my finger well into the opening, I felt beneath the smooth surface of the tumour and over it, this thick soft purplish tissue which had puzzled us, apparently the omentum, adherent partially to the tumour, partially to the anterior abdominal wall; I now, with my finger, began to separate the adhesions, as far as possible, from above downwards and toward the right, where, of course, I had most space, the omentum being far to the left. As I progressed the true state of affairs became evident: the omentum was thickened, perhaps to the extent of one-third of an inch, and was adherent in part to the anterior abdominal wall, to the bladder, and by one firm broad band, some three inches in breadth, to the tumour; the attachment to the bladder had become so firm, and so intimate, the thickened omentum and the elongated, distended, and thinned bladder appeared so much alike, that it was only by introduction of the catheter that we could detect the fundus of the bladder, almost at the umbilicus. Two silk ligatures, not carbolized, were placed about the lower portion of the omentum, just above the upper border of the bladder, as indicated by the sound, and then this mass of heavy tissue divided by the scissors; so also was the long, but very broad and thick, portion of omentum attached to the tumour tied and cut. Braided silk of medium thickness was used, and before we were enabled to free the tumour completely, many more ligatures of the finest braided silk were applied. Numerous delicate adhesions, thin long bands, which appeared at every point, were severed. The tumour was now exposed, and proved to be a smooth, round, colloid mass, which I could not but liken to an orange watermelon, after the rind has been removed, on account of its peculiar sections and the absence of any cyst wall or decided outer covering; it was a uniform, colloid, thickly gelatinous mass, simply a little more consistent toward its circumference, but not inclosed in any distinct capsule. It was too large to be removed through the opening, too soft to be cut to pieces, so that I was obliged, after the patient had been turned upon her side and the tumour dragged into the incision, to claw out this glutinous, colloid mass, by the handful; when it was sufficiently reduced in size to be dragged out, the long pedicle was tied and dropped.

Upon examination the left ovary also was found to be diseased, containing a cyst the size of an orange; this was tied and removed. Six or eight of the delicate little cysts, which at first so annoyed us, still remained; I followed their pedicles to the upper surface of the liver, in the vicinity of the diaphragm, and there tied them. The liver itself was normal and healthy, with a perfectly smooth, transparent, peritoneal surface, and the cysts were in no way connected with the organ itself, but evidently originated from the peritoneum in the neighbourhood of the line of attachment of the liver and diaphragm.

A great deal of time was consumed in thoroughly cleansing the abdominal cavity, as there had been some little oozing, and, moreover, some of the glutinous contents of the tumour had escaped, and were hard to remove; so many larger adhesions had been severed, as well as innumerable smaller ones, that it was some time before I had any certainty that all the vessels had been secured, and the bleeding completely stopped. Most patiently and thoroughly was the abdominal cavity cleansed with warm, soft sponges, well wrung out in pure, hot water, not disinfected; the deep chasm behind the uterus and the surface of the distended and adherent bladder were special objects of our care. Four ligatures of heavy silk, and twenty or more smaller ones were left in place, and the incision closed with heavy silver wire clamped by shot; the ligature, which had been placed above the fundus of the bladder, was fastened within the incision; the others cut short and dropped. I applied my usual dressing, varying from the routine of Lister by the use of carbolized cotton in place of the gauze. We were all grateful when the patient was placed in her bed still breathing and with a fair pulse.

The patient suffered no pain at any time after the operation, with the exception of the first afternoon, when she awoke after a long and healthy sleep from the effects of the anæsthetic; this pain was readily relieved by a small injection of morphine, and, during the rapid convalescence which ensued, the only discomfort experienced arose from the stitches, which I had left in place longer than necessary, being fearful of removing them too soon on account of the severity of the operation, notwithstanding that union by first intention ensued.

During the first day after the operation she was nauseated, and could retain nothing but champagne. But that evening she began to take iced milk, which remained her most important article of diet throughout. Pulse on the second day, eighty-four; on the third, eighty-six, morning and evening, with a temperature of one hundred and one; this was the highest temperature. Upon the fourth day the pulse was eighty-two, temperature ninety-nine and five-tenths, and the morphia, which she did not tolerate very well, was then stopped and not again resorted to. The symptoms were favourable, and the patient steadily improved, sleeping well, relishing her milk and beef-tea. No more narcotics. On the ninth day (not my usual practice, but here indicated) the bowels were moved by an injection of soap and water, and the dressing changed for the second time, and from now on the wound was dressed in cotton steeped in carbolized oil, and covered with oiled silk. The bowels moved naturally on the eleventh day, and not until the sixteenth day did I remove the stitches which had cut and annoyed her considerably for the last few days. I was careful to have the abdominal wall secured by strips of adhesive plaster, and, as long as she was still in bed, by a well-fitting bandage of home make. As soon as the patient was able to sit up and move about the room, the abdomen was supported by a firm well-fitting bandage, made for her by Mr. Schleifarth. I look upon this as a most important matter, and call especial attention to it, as I have seen some unfortunate results from neglect of proper prevention at this period.

When patient returned home, I insisted upon the greatest care, the wearing of the bandage, abstinence from exertion of any kind, attention to diet, fresh air, and suitable exercise. Although in the main she attended to her household duties throughout the fall, it was not until the following spring that she fully resumed them, and the consequence is that she now enjoys the most perfect good health, is strong and hearty, with a rosy, healthy complexion, dispenses with her bandage, and is able to endure any exertion whatsoever.

Notwithstanding the removal of both ovaries, menstruation continues regular; patient menstruated April 15th, on the 22d I operated; the next menstruation appeared May 18th, quite profuse for four or five days. This was on Monday, five weeks after the last normal menstruation; then three weeks later she again became unwell, Thursday, June 10th; this was resuming the early habit, coming back to the regular time she was accustomed to before the operation. She experienced very little backache, there was no pain, and the flow was free. The next was July 10th to 14th; then a slight flow from July 30th to August 1st, and again August 10th to the 11th. After the operation the flow became more scanty, but there was no pain, and very slight backache. I now supposed that the discharge would grow more scanty and cease, but, on the contrary, after the slight irregularity, menstruation again became normal and regular, and so continues up to date, November 28, 1881.

Mrs. T. is in the full enjoyment of a happy home and family life, full of love and devotion to her husband, children, and friends; a charming lady, in full possession of all womanly attributes, performing every womanly function, wanting only the power of conception, ovulation in this case not accompanying menstruation. I cite this with special reference to those authors who maintain that after the removal of the ovaries women lose their special attributes; the voice becomes harsh, the figure angular, love ceases, etc. Though this be not so, it is true that in the majority of cases menstruation ceases. Peaslee, in his work on "Ovarian Tumours," says that menstruation, or what he calls metrostaxis, continued in only six of all the cases of double ovariotomy known in literature. The function in this instance is so regular and so perfectly like to that experienced before the operation, that I must call it menstruation and not metrostaxis. The specimens in my possession preclude the possibility of a part of an ovary having remained *in situ*, and thus accounting for the continuance of the flow.

Spencer Wells discusses at great length the question of how to deal with the pedicle in double ovariotomy; in times of the clamp it was, indeed, a question; but now I would advise, as I did in this case, to tie and drop, unless, perhaps, the clamp or cautery were indicated, by special reason, for one or the other of the pedicles.

Case II. *Suppurating Ovarian Fibro-cyst.*—Was called to Belleville in July, 1875, to see Miss Susan X., aged 37, a tall, somewhat angular, slightly anæmic brunette, who had been suffering from uterine hemorrhages. Patient had never complained of backache, bearing down, or abdominal pains, although she sometimes had experienced a feeling of constriction—indistinct constriction of the abdomen. Appetite was moderate, stools regular, inclined to be loose, passages of urine normal; but her early history was rather peculiar, and, I think, indicative of the character of the abdominal enlargement, which she had not noticed until recently, but which the physician in attendance claims to have observed years ago. Menstrual flow first appeared in her thirteenth year, and came in irregular intervals, but always on the same day of the week, Monday, sometimes Sunday; never profuse. At eighteen she took cold whilst washing during the continuance of the menstrual period; profuse flooding followed, and with it the catamenia ceased entirely until her twenty-first year, when she was prostrated with typhoid fever and again had a faint flow for several months. For the next twelve years amenorrhœa existed, until she was thirty-three, when she was again sick for several weeks, and again there was a return of the menstrual flow; it soon ceased, however, not reappearing until three years later, in her thirty-sixth year, in the fall of 1874. In April, 1875, profuse flooding set in, which was almost continuous, sometimes ceasing for a few days, but returning more markedly for three weeks, when, clotted blood escaping, considerable relief followed; she being always relieved when a large clot of blood passed.

External examination showed the abdominal wall relaxed, readily revealing a tumour resembling the gravid womb of the fifth or sixth month. The tumour is somewhat ovoid, larger above, situated about the median line, extending downwards and behind the symphysis. Its surface is apparently smooth, with the exception of a distinct protuberance at its left upper extremity. It reaches almost to the navel, and on either side to within one and a half inch of the anterior superior spine. A vaginal examination showed the labia somewhat congested; the entroitus narrow; vaginal portion small, looking toward the sacrum; in the anterior cul-de-sac, in the position of the anteflexed corpus uteri, is a hard round growth of the size of an apple, which seems to move with the large mass of the tumour, although external pressure produces only a very slight motion. A solid, hard, round, apparently movable mass lies in the hollow of the sacrum, and cannot be separated from the vaginal portion; both appearing equally movable. Sound would not enter beyond the depth of a quarter of an inch.

After repeated dilatations with sponge tents, I was enabled to introduce a sound to the depth of two inches, and to apply iron to the cavity. Advised rest and ergot, Squibb's fluid extract, first one-half teaspoonful twice a day, later one teaspoonful twice a day, tonics, vaginal injections with tannic acid. This was July 18th. Flooding soon ceased. Ergot was borne well. August 12th a slight flow of blood reappeared, scarcely, however, staining the linen. August 20th, found the patient looking better, considerably improved; had gained four pounds, and the tumour had been reduced in all dimensions. Subcutaneous injections of ergotine were now made, in order to relieve the stomach; and, as has been my experience ever since, I found that the alcoholic solution was much better borne than that in glycerine, as was originally recommended by Hildebrandt, who first advised ergotine injections in uterine fibroids. Hildebrandt's formula was: Ergotin. 3.0 (grammes); glycerin., aquæ, āā 7.5. M. S. One syringeful = 0.2 = 3 gr. ergotin. I used: Ergotin. (Bouj. French aq. extr.), ʒss; alcohol., aquæ, āā ʒj; morph. sulph., gr. 1. M. S. One syringeful = 4 gr. ergot, $\frac{1}{7}$ gr. morph. Injections of this solution were made daily for one week by Dr. Rubach, and caused a sensation of uterine contractions; the patient not feeling well during the time; but the effect was soon visible in a still further decrease of the tumour and in the great improvement of the patient. After the cessation of injections, ergot internally was again resorted to, and continued with one or two day's intermission each week.

Patient continued to improve steadily until October first, when her weight reached 143 pounds, thirteen pounds more than when I first saw her. The tumour now again began to grow both upwards and downwards. I again dilated with a sponge-tent, and was enabled to pass the soft rubber catheter through the tortuous canal to the depth of five inches, although I could not introduce the sound farther than before.

I was in a dilemma as regards the diagnosis: the history of the case pointed to an ovarian disease—the cessation of the menstrual flow, without the appearance of menstrual molimina, the early appearance of the tumour on the right side; on the contrary the recent flooding, the greatly enlarged uterus and its tortuous canal, together with the decided effect of ergot upon the size of the tumour led me to suspect a uterine fibroid, moreover there was a solid tumour in the posterior cul-de-sac apparently immovably connected with the uterus; but especially the decided reduction in size of the tumour by the continued use of ergot caused me to believe that this was a case of uterine fibroids,—submucous, as well as intramural or subserous. The operation by the vagina and uterus was impossible as there certainly were subserous tumours; and the extirpation of the entire uterus appeared to me, at the time, so formidable an operation that I was unwilling to advise it until more urgent symptoms should appear. This was a fatal error, though justified by the rule in vogue at the time, and unfortunately still in vogue among surgeons in this Mississippi Valley, of not operating until life is endangered; actually this was the time to operate; an operation was inevitable, now the patient was in the best of health and spirits, the tumour decreasing in size, digestion good, in short now was the time to operate, now her chances were best. In this one case I have experienced the error, and in many another has the sudden death of the patient from rapid growth of the tumour carried her away, whilst she was waiting for that moment to come when "the tumour should endanger life" which she herself and her attending physician considered the proper time to place her in my hands for operation—before that it would be rash to endanger life by an operation—that terrible and fatal error which still brings death to many a door in this valley. The hemorrhages again made their appearance in January, 1876, fever came, appetite was poor, the patient was even nauseated at times. Stool was thin, intense pain in the right side was experienced, and for a short period in December intense pain accompanied by stitches in the bowels. In January fever increased, difficulty of breathing and loss of appetite were accompanied by a severe pain in the left upper part of the tumour; the cervix seemed enlarged and hard, and that small tumour in the posterior cul-de-sac was extremely tender to the touch.

Patient was brought to the city in January, and was put under treatment, receiving the most delicate attention and careful nursing from friends who accompanied her. She improved somewhat; pulse and temperature, which throughout January had reached 108 to 140, averaging 120, and 100° F. to 102° F., were somewhat reduced in February, when her pulse remained at 84 to 90, and her temperature about 99.4°. Her condition then appeared at its best, and no farther improvement could be attained, hence the operation was decided upon. The slightest accident, neglect, or imprudence would have caused a relapse and probably a rapidly fatal result in consequence of the incipient pyæmia. The case being a questionable one, she was seen in consultation by several esteemed friends, one of whom gave it as his opinion that the tumour was carcinomatous on account of its recent rapid growth and rough uneven surface and transverse enlargement, for which reason, as well as the immobility of the tumour, he advised against the operation. Another advised me to wait with the operation, as her condition seemed to improve, until the inflammatory stage should have subsided. He correctly diagnosed fluctuation of the left upper portion of the tumour, and an indistinct fluctuation with possibly a thicker fluid—a formation of pus following the inflammatory condition of the tumour in the right upper portion. To me, also, the physical examination revealed the condition last described, fluctuation in the left upper portion with a thicker fluid near the right and solid fibrous masses in the central and lower portions; possibly the inflammatory condition may have been due to the too free use of ergot, as Byford claims that it so occurs. The uterus was very much enlarged, was now immovable, and apparently a mass of solid, hard tumour was wedged in between it and the hollow of the sacrum, so that the condition accordingly appeared to me as that of a suppurating fibro-cyst of the uterus; as the patient's general health did not improve but appeared at its best with a threatening decline and coming pyæmia, I advised the operation.

On February 13, I prepared to operate, with the kind assistance of Drs. Hodgen, Baumgarten, Boisliniere, Schenck, Nelson, Fischel, and others. I was prepared to remove the uterus, clamping the cervix, and was considerably surprised, as the operation advanced, to find that we were dealing only with a fibro-cyst of the ovary. The operation presented no peculiar features, with the exception of the difficulties consequent upon numerous delicate adhesions, partially to the abdominal wall and partially to the intestines, and the difficulty of raising the tumour, on account of the firmness with which the lower fibroid mass was wedged into the hollow of the sacrum, and it was only by strong traction that it came out, and that with a distinct thud. The pulse during the narcosis was at 80, but within an hour after the operation it began to increase in rapidity, and as pulse and temperature slowly rose, the respiration grew more rapid. The patient steadily failed from the moment she fully recovered from the effects of the anæsthetic until she died, thirty-six hours after the operation, notwithstanding the most careful attention and devoted nursing.

The *post-mortem* examination by no means distinctly revealed the cause of death. There was no peritonitis, nor had there been any oozing, no blood was found in the cavity, but some thick yellowish lymph with only slight serous exudation. The abdominal wound had well united, and a thick covering of lymph had been thrown about the pedicle, as well as several of the larger adhesions which had been tied with ligatures, and also the posterior portion of the bladder.

The operation was performed in the early days of Listerism, and I have often reflected upon the peculiarity of the symptoms, the rapid and steady decline from the moment the patient recovered from the narcosis. The sponges, for days, had been soaked in carbolized water; carbolic acid was freely used in the water in which the sponges were cleansed; the instruments were kept in a five per cent. solution, and the sprays had been directed well upon the wound.

DEDUCTIONS.—I have endeavoured to relate the histories of the preceding cases as briefly as is consistent with the objects of this paper, and as pointedly as possible, in order to call attention to the difficulties which present themselves, omitting self-evident or well-known points, in order that others may profit by my own accidents or misfortunes, and to show how unreliable many points and rules laid down in text-books may prove when tested in practice, how cautious the operator must be, and how decidedly each case must be judged upon its own merits, how imperfect our suppposedly perfect means of diagnosis have proved, and how helpless they leave us. I will call attention to a few of the difficulties, diagnostic and operative, encountered in these cases, which I believe it will be well for the surgeon to bear in mind.

Hints as to Diagnosis. 1. *The Difficulty of Determining the Existence of Adhesions to Yielding Parts.*—(*a*) In Case I., it will be remembered, the tumour was smooth, round, and freely movable in every direction, rolling from right to left over the promontory of the sacrum. Freely movable up and down, movable independent of the uterus, moving as the patient moved herself from side to side. The abdominal wall was freely movable over the tumor, and no history of abdominal pain or inflammation existed; and yet, upon opening the abdominal cavity a most discouraging condition was revealed: unusually heavy, strong adhesions of the omentum to the tumour, of the bladder to the abdominal wall, and of the bladder to the tumour; but these were all lax, movable organs, attached by long bands of adhesions. The surface of the tumour itself was smooth, hence it was a condition impossible to diagnose.

(*b*) A similar condition of affairs I found existing in a case recently related before the St. Louis Obstetrical Society, in which I attempted

Freund's Operation for the removal of the cancerous uterus, and was deceived by a similar mobility of the womb. It was freely movable in every direction, and the omentum, bladder, and intestines were attached to it, forming dangerous adhesions, but in no way impeding the mobility of the organ.

(*c*) In Case II., we find a completely immovable mass, a firm, hard portion of the tumour which lay wedged in between the sacrum and the uterus, apparently immovably connected with the latter organ; and yet it was only held in place by mechanical impaction, the pelvis being filled out by the fibrous portion of the tumour in front of the uterus, the uterus and the tumour in the hollow of the sacrum, and this was so firmly wedged in, that the absolute immobility naturally led us to look for serious adhesions: fortunately none but the slightest, which in no way impeded the operation, were found.

2. *The Difficulty of Differentiating between Abdominal Tumours of Certain Kinds.*—(*a*) In Case I., one of our ablest diagnosticians looked upon this uniform colloid tumour as a fibro-cyst, and although in my first examination of the case, I had diagnosed a tumour of a uniformly semi-solid consistency, I was forced to share his opinion upon a second examination, evidently under other conditions, with a full bladder, and at this time the diagnosis of a fibro-cyst was undoubtedly justifiable by the fluctuation—distinct fluctuation—in the region of the navel, extending a short distance downward. This fluctuation, as was shown in the course of the operation, was caused by the urine in an unusually expanded bladder, superimposed upon the colloid tumour, in a most unusual location, without the ordinary appearance of a full bladder, which shows the pear-shaped tumour directly above the symphysis. I believe it almost impossible to have avoided this error.

(*b*) In Case II., I deem my own diagnosis of a uterine fibro-cyst not only justifiable but absolutely necessary on account of the firm connection, by mechanical impaction, of the uterus and the round fibroid mass behind it; the tumour was immovable, the tumour and the uterus were immovably connected; moreover, the uterus was very much elongated and its cavity tortuous, as it would be in a case of intra-mural fibroids. The profuse hemorrhages, the action of ergot in causing a cessation of the metrorrhagia, and a reduction in the size of the tumour, all clearly indicated the existence of a uterine growth. The only point indicating an ovarian tumour was the early cessation of the menses without menstrual molimina and the first appearance of the tumour in the right side. But little reliance, however, can be placed upon the last point, as it is simply a matter of record on the part of the patient.

3. *The Difficulty of Recognizing Elongation and Expansion of the Bladder.*—Peculiar as it may appear, this condition is one not readily recognized. Certain it is that the first intimation we usually have of the

existence of an elongated and expanded bladder, is given by the entrance of the knife into the cavity. We do not look for it, and hence insert the catheter in a routine manner in withdrawing the urine before the operation. In every single instance should the bladder be carefully explored when this opportunity is given for using the catheter and a long male instrument—rubber,—French or English—should be used; but unfortunately, even a careful exploration may fail to detect this condition, and deplorable results follow with almost infallible certainty.

It is not in every case that we can detect this dangerous condition of affairs.

(*a*) The catheter or sound cannot always be passed to the fundus.

(*b*) There is frequently no disturbance whatsoever in the urinary secretion, either in quantity, quality, or time, and no distress of any kind.

Theoretically it may appear a very simple matter to determine this condition, but when we see how often the experienced operator cuts down into and through the thus distended bladder, this difficulty will become apparent. Dr. Thomas has cut into the bladder, so also Dr. Homans, of Boston, and others. The distension is fan-like; the walls are so thin that the catheter appears distinctly through them; the bladder is partially adherent; the resisting mass of the tumour presses it firmly against the anterior pelvic wall, hence the catheter does not pass, and this adhesion, most difficult of all adhesions to be recognized, is the most important of all to the operator. None other would I dread so much; no other condition so dangerous as a bisected bladder, hence we should scrupulously endeavour to avoid it.

OPERATIVE HINTS. 1. *A regard for the safety of an enlarged bladder* should make the operator extremely cautious in the completion of the abdominal incision, especially as we have seen that it is often impossible to recognize this condition beforehand, and as the appearance presented by the organ in this state is so deceptive that the most experienced operators have failed to recognize it, and have readily cut into the bladder, usually with fatal result.

In my case, the bladder being drawn up so high by its union with the omentum, and being spread over the tumour and compressed between it and the anterior abdominal wall, was very thin, and of a purplish hue, not to be distinguished from the thickened and inflamed omentum; the subperitoneal areolar tissue is closely adherent on both surfaces, not loosely as is usual, but still partially retains its normal appearance, thus serving to indicate, partially at least, the depth reached; as it forms one layer with the peritoneum we cut through both, believing, as would be the case under ordinary circumstances, that only one layer is severed, and now the peritoneum must come to view; but instead of the thin, pale, whitish-blue membrane, which is looked for, a thick, purplish tissue is seen; what can it be? It is not the smooth, glistening surface of an ovarian tumour; it might be the thickened, inflammatory wall of a pus-cavity, and yet it appears more like a membrane to the touch than a cyst-wall; if the peritoneum has been cut, it has been done accidentally. The operator must not cut into this membrane, which is either a distended bladder, a thickened omentum, or a thickened cyst-wall, but he should carefully endeavour to sever this layer with the scalpel-handle from the superimposed abdominal wall, and to reach its border; if he succeed in this the surface of the tumour or intestinal coils will at once come to view. In order to avoid the accident as much as possible, I always enter the peritoneum at the upper angle of the incision.

2. *It is a matter of the utmost importance to secure deep and firm union in the line of the abdominal incision,* in order to avoid the occurrence of ventral hernia in the convalescent.

The ordinary precautions should, of course, be observed that the edges of the wound be well adapted, etc.; but I am, moreover, especially careful to use the *heaviest* silver wire obtainable; to include peritoneum and recti, one-half inch of the peritoneum and three-fourths to one inch of integument; to achieve close and firm adaptation of the peritoneal surface, as a perfect union of the external portion can be easily secured by superficial sutures. An unfortunate mistake is often made in endeavouring to obtain a neat adaptation of the parts by the first, deep sutures; and this is usually secured at the expense of the peritoneum and recti; the sutures, in order to allow the surfaces of the cuts to come nicely together, must be drawn tight externally, but remain rather loose in the depth; whilst if they are drawn firmly, as they should be, so that the peritoneal and muscular surfaces are well adapted, the incision usually pouts superficially. As soon as the first wires are removed, straps of adhesive plaster and a home-made, but well-fitting, bandage should be applied to remove any strain from the abdominal walls; the bowels should be kept in good condition, and a strong, well-made bandage or abdominal supporter should be worn for the first month, as soon as the patient begins to move about.

My attention has been called to this point mainly by the large ventral hernia in a patient of mine in a neighbouring city, who was operated on, at my request, during my sickness, by an esteemed colleague, who was, however, unable to personally superintend the after-treatment, and by reason of the absence of a proper support a ventral hernia developed, extending the entire length of the incision; and not until I had secured a proper supporter, with an enormous plate, was the sufferer enabled to attend to her household duties. A second case of the kind occurred in my own practice as the result of an exploratory incision of the abdomen, in a case of attempted removal of the uterus. Patient recovered so rapidly that the proper precautions were neglected; the stitches were removed too soon, she sat up early, and travelled to her home three weeks after the operation; all without the necessary support, so that the recti parted, and the integument alone was left to cover the protruding intestines.

In cases in which the proper precaution was observed, the abdominal walls are as strong as before the operation—I may say stronger—and no exertion is too great for them.

3. *Hemorrhage should be stopped by the ligature, and the finest braided silk which will serve the purpose should be used.*—Torsion, pressure, and cauterization, chemical or actual, are unreliable; harmless upon a surface, but dangerous in a cavity once closed; moreover the tissues are injured and irritated thereby. I ligate every doubtful point; it is certain, saves time, and is less harmful than any other method. The very finest braided silk will answer almost every purpose, and somewhat heavier threads will answer for the largest vessels; if cut short and dropped, the quantity used is so trifling that it can be entirely disregarded. It is safer than catgut, equally harmless, and much more easily handled. Case I., who carried at least thirty ligatures of silk, four of them very heavy, made an unusually rapid recovery with scarcely any elevation of pulse or temperature. An excellent article can be obtained, but each strand should be tested before using, as time and atmospheric influences often effect serious, yet invisible, changes.

4. *Listerism, as routine treatment, is not only to be avoided, but to be dreaded by the ovariotomist.*[1]—Although Case II. was one most unfavourable for ovariotomy, a suppurating fibro-cyst with pyæmic symptoms, I

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[1] Since the reading of this paper, the November number of the *American Practitioner* has come to hand, and with it a paper on Ovariotomy, embodying the latest views of that most successful operator, Thomas Keith, which has afforded me the very greatest pleasure and satisfaction, as his method, finished to the highest degree by successful experience, differs in but few of its details from the course I have adopted in the face of our authorities. Not only have his patients, but also Keith himself has been poisoned by the use of carbolic acid, and since Dec. 1880, he has not used antiseptics, "in the proper sense of the word," as he phrases it, in his ovariotomies, and operates with better success than ever, absolving himself from the sway of that dangerous phantom, that antiseptic mist, which now enshrouds all surgery, and bids fair to rule for some time to come, until its advantages and disadvantages are clearly understood. Many valuable truths are collected in that one short paper, and many facts clearly stated, which writers are accustomed to veil in mystery, or simply to conceal beneath false statements, in order to hide their own ignorance. He properly extols the value of the reflector as an "enormous assistance" in making a careful survey of the abdominal cavity, and as enabling us more readily to see the bleeding point, but seems to think that he alone uses that important instrument.

I invariably resort to it before closing the incision as a safeguard, lest some bleeding point should escape me, and I well recall my first ovariotomy upon a dark stormy day, when we should have been absolutely lost without mirror or reflector—and I will add that an ordinary hand-mirror answers that purpose very well, when a reflector does not happen to be at hand.

I myself, in common with other physicians of this city, have been in the habit of using the laryngeal reflector for a variety of other purposes. In the cavities I have found it extremely useful.

have never ceased to reproach myself for the use and abuse of carbolic acid during the operation; this was during the early days of Listerism, and I endeavoured to follow the prescribed plan as closely as possible: the sponges, previously steeped in carbolized water, were cleansed during the operation in carbolized water; carbolized water was used for hands and instruments; the spray was directed immediately upon the incision and upon my hands so as to numb them; instruments were kept in carbolized water, ligatures and silk were carbolized. The following collapse and rapid passing away of the patient, already, indeed, pyæmic, has always, in my mind, savoured of carbolic acid poisoning.

I have pursued a different plan since, a modified Listerism, of which Case I. is a fair example, and I am glad to see that Mr. Lister himself has given a death-blow to this carbolic-spray treatment; it will be retained in some few cases, where it indeed serves an excellent purpose, but it must be abandoned as a routine treatment, and, above all, in ovariotomy. Mr. Lister, in commenting upon a case of death from carbolic-spray poisoning, lately reported to the Clinical Society of London, by Mr. Gould, said that "Carbolic acid is too powerful an agent to be safely applied to delicate subjects."

I rely upon absolute cleanliness of patient, operator, and assistants, of room and bedding, sponges, and instruments. My sponges are steeped, for twenty-four or forty-eight hours previous to the operation, in a carbolized, or other disinfectant, solution, and two sprays are directed over bed and operating-table for one-half or one hour previous to the operation; and during the operation itself, from some distance and height, over the operators, but not so as to admit of the carbolic acid being felt in any way. The silk is not carbolized, and the sponges are cleansed in *pure* water—*clear*, *pure*, but hot water—the sponges must be warm. I also avoid the use of too much carbolic acid in the dressing, and endeavour to protect the integument so as to prevent the possibility of any absorption. I believe that the daily warm bath for a week or more previous to the operation is also an important detail, not only to cleanse the surface, but more particularly to increase the activity of the surface.

Cleanliness is all-important, and carbolic acid, although in a certain measure harmless and even beneficial, is dangerous, as the numerous cases of carbolic-acid poisoning gradually accumulated testify; and dangerous in particular to so delicate and sensitive a membrane as the peritoneum; hence let us be more careful in its use, and, above all, do not attempt to perform ovariotomy strictly under the spray with full antiseptic precautions, in the now accepted sense of the expression.

5, and last, but most important of all, I would advise surgeons in this Mississippi Valley to *operate early*—to give up the *old* and *fatal* rule of *operating only when life is endangered*. Ovariotomy is looked upon as a desperate and almost necessarily fatal resort in this very valley in which

McDowell first originated the operation—experience has truly proven it a dangerous operation here—and why? merely because surgeons have acted on the antiquated rule of not operating until life is endangered; then it is too late; the powers are failing; the tumour is encroaching upon vital organs; is infecting the system; the patient no longer has the needed power of resistance; she sees death imminent and *now demands* the operation of the surgeon, and now it is almost necessarily fatal.

The laity look upon ovariotomy as an operation so dangerous that it is to be avoided as long as possible, and in this they are encouraged by the mass of physicians—the few who risk an operation when life is endangered die as a rule—hence, women prefer to carry their tumours to the grave, to die by reason of their increasing size, and no opportunity is given the patient or the surgeon; he operates in rare instances, and then under the greatest disadvantages.

If suffering women but understood how greatly their chances were increased by an early operation, and if physicians would urge this upon them, we would have comparatively few fatal cases, and women would hasten to the surgeon as soon as an abdominal enlargement is discovered, and they would look forward to the operation as a means of relief and prolongation of life, and not as a means of hastening death, ovariotomy would at once come to be an operation accepted and acknowledged by the profession and the people; and the fatal cases would be those—as in all other tumours—in which the patient has waited too long.

I am informed of a number of patients who are now under observation of their physicians in this State and in Illinois, who are waiting for the growth of the tumour, waiting for symptoms threatening life before undergoing the operation—so thoroughly has this rule of not operating until life is endangered been taught that I cannot urge them to seek relief at a reasonable time—did they but realize the precious moments they are losing!

The most important of all the teachings in my experience is to operate early, if you operate at all.

Before closing I will again briefly recall the points I have endeavoured to urge:—

1. Enter the peritoneum at the upper angle of the abdomininal incision, mindful of the safety of an enlarged bladder.

2. Endeavour to secure deep and firm union of the abdominal incision by carefully and closely placed sutures during the operation, and proper support for months after.

3. Ligate all bleeding points, use the finest braided silk, cut short, and drop at once.

4. Avoid routine Listerism, and especially the carbolic acid spray over the hands of the operator and into the abdominal cavity. Cleanliness, not carbolic acid, is necessary. Keep sponges clean and warm, but *not* car-

bolized; avoid carbolic acid about the peritoneum and open surfaces. Ligatures, sutures, and instruments should be clean, but not carbolized.

5. Late operations are the scourge of surgeon and patient in this valley. If an operation is indicated, operate early, as the patient's chances decrease with the growth of the tumour and the failing of health.

ARTICLE III.

ON THE ABORTIVE TREATMENT OF BUBOES AND LYMPHADENITIS GENERALLY, BY INJECTIONS OF CARBOLIC ACID.

By MORSE K. TAYLOR, M.D., Captain and Assistant Surgeon U. S. Army; late Surgeon and Brevet Lieutenant-Colonel U. S. Volunteers.

By the term "abortive treatment" I mean the immediate and complete arrest of inflammatory processes set up in the lymphatic glands from whatever cause, the prompt and permanent relief from pain, and the prevention of the formation of pus, and consequent abscesses.

The pathology and treatment of these glandular inflammations has of late received much attention in various directions. In the late International Medical Congress the subject was discussed at considerable length by Sir Wm. Gull and others; while MM. Bouchut and Le Pileur, of France, have recently contributed valuable articles to the literature of this branch of surgery. In none of these discussions, however, is the immediate and perfect arrest of the inflammation set up in these glands once referred to. In the English discussions, the views expressed were to the effect that these glands are not prone to take on inflammatory action, except as the result of the absorption of septic matters from neighbouring morbid conditions, and that the proper treatment is to open the glands early; and, in case the deposits are of a caseous character, to enucleate or extirpate them. Bouchut recommends measures favouring the early breaking down of the structures, and to this end he has injected vegetable peptones obtained from the *Carica Papaya*, so as to digest the effused products, thereby producing an early abscess. This treatment is effective, it would seem, but very painful. Le Pileur advocates the early aspiration of the abscess, and in case it is of venereal origin, the injection of nitrate of silver; while in the non-specific forms, he recommends the injection of solutions of boracic acid, or chloride of zinc. He states that the average duration of this treatment in nineteen cases was twenty-four days, which he deems successful and an improvement. Some have advocated the use of refrigeration, others pressure, and again others, and perhaps a majority, counter-irritation by iodine and blistering. None of these, however, afford any certainty in respect to arresting the morbid action, allaying the pain, or preventing the formation of pus, and the destruction of surrounding parts.

For nearly seven years I have pursued a different course in the treatment of this class of affections, and limited my practice to simply injecting the glands with solutions of carbolic acid. In this time I have treated nearly 150 cases of various forms of lymphadenitis, arising from specific and non-specific causes ; and, where I have seen them before the formation of pus was well established, I have not failed to arrest the process immediately, and allay the pain in a few minutes. To indicate more fully the success attending this mode of treatment, notes of a few of my cases are herewith submitted. They are condensed as much as possible to save time and space.

CASE I.—While I was stationed at Austin, Texas, Mr. K., an English gentleman, aged about 30, and of excellent physique, called on me May 2, 1875, on account of a painful bubo in the right groin. He was desirous of going to Mexico, and was much distressed at the prospect of being delayed by the impending abscess; besides, having been exceedingly annoyed for two or three nights with the pain, and this, to the extent of allowing him no rest. The swelling and soreness were such that he could not stand erect or walk without great suffering. He gave, as an explanation of the cause, that he had been riding several days very hard on horseback looking up lands, and that about a week before he was out in a rainstorm nearly all day, at the close of which he reached that city. During the day he had felt some slight pain in that region, but paid no attention to it until the next morning, when he noticed a kernel there, which was quite tender to the touch, and annoyed him when he walked; and that, from that time to the present, it had been steadily enlarging and growing more painful. He stated further that, being a stranger, he had been advised to employ a certain physician, which, subsequently, he found to his disgust, to be a homœopathist. An examination revealed no venereal disorder, and he denied ever having had anything of that character. He was very anxious to proceed on his business, but more so to be relieved of the pain that he might get some sleep.

The tumour was about two and one-half inches in length, of an ovoid shape, rather superficial, and situated on the inner aspect of the thigh just outside the femoral vessels, and perhaps two inches below Poupart's ligament. It was in the same region in which we so frequently find similar forms of lymphadenitis in cavalrymen after exposure and hard riding.

It was very painful to the touch, the skin was of a rose tint over a large part of the tumour, and from the general appearance it was on the verge of suppuration. I was inclined to poultice it, but he objected to that, and wanted something more prompt for the relief of the pain. Morphine hypodermically suggested itself, but recalling the remarks of Surgeon J. H. Bill, of the army, on the local anæsthetic action of carbolic acid, and the further fact, that, in those cases where I had aspirated buboes, and thoroughly washed them out with carbolic solutions, the pain and soreness had been promptly relieved, I determined to give it a trial in this instance. Accordingly I prepared a solution of four grains to the ounce of distilled water, and after chilling the surface with ether spray, so as to diminish the sensitiveness, I seized the tumour firmly, and injected into the centre of the gland twenty minims of the solution. Feeling somewhat uncertain as to the result, I concluded to remain at his bedside and watch events. The operation gave very little pain. In about fifteen minutes he changed his position, when he remarked with some surprise, "I'm blarsted if I don't think that thing feels better." "It don't hurt me at all now to move my leg."

From this time there was no more pain or soreness worth mentioning. Not expecting to arrest the formation of an abscess, I called the next day under the impression that he would be again complaining, but to my gratification he stated that it had not troubled him in the least, and that he "could walk without minding it." I injected it again, however, and repeated the operation the second day thereafter, fearing that the inflammatory action might be renewed. But there was none whatever, and from the day following the first injection, he went about his usual business. The only additional treatment he received was a saline laxative. In ten or twelve days the tumour was not discoverable.

Case II.—Private J. A., Company D, Tenth infantry, was admitted to the Post Hospital, at Austin, July 12, 1875, with chancroid and a large bubo in each groin, nearly three inches in length, very painful, the skin flushed over both, and so tender as to make him unwilling to submit to the necessary manipulation to determine whether or not the glands had broken down, and abscesses had formed. He was an old soldier, and his constitution was much impaired by his excesses in drinking and venereal indulgences. He was a hard subject at the best. I chilled the surface with the spray, and injected twenty minims of an eight-grain solution of the acid into each. On the introduction of the needle, I found pus was present, and I then aspirated the tumours and injected them the second time. The relief was immediate. The next day I aspirated them again, but obtained only a small quantity of thin pus, when I injected them as before. From this time on the buboes gave him no trouble, but for the chancroid he would have been returned to duty at the end of the week. He remained in hospital three weeks, at which time there was no trace of the buboes nor evidence of the abscesses.

Case III.—Musician C. M., Co. D, Tenth infantry, reported at the Post Hospital July 29, 1875, with a bubo following chancroid of ten days' standing. Injected the bubo on the same day, and returned him to duty August 11th. He was retained in the hospital to enable me to watch the effect of the treatment on the bubo as well as for treatment of the chancroid. But one injection was required to allay the pain and inflammation of the gland. No suppuration occurred, and the swelling was scarcely noticeable when returned to his company.

Case IV.—Private Wm. H., general prisoner, reported August 6, 1875, with primary syphilis, and bubo in left groin two inches in length and painful. Injected 20 minims of the carbolic acid (8 gr.–℥) solution. Returned to duty on the third day thereafter; the chancre was treated in quarters, as the prisoner could not be safely guarded in hospital.

Case V.—Private A. P., Co. D, Tenth infantry, reported April 19, 1876, to Post Hospital, San Antonio, Texas, to which station the command had been changed. Bubo following gonorrhœa. Injected the gland and returned him to duty the next day. The gonorrhœal attack was mild, and of which he did not complain. The bubo was the only annoyance.

Case VI.—Private L. M., Co. D, Tenth infantry, admitted Dec. 23, 1875, with acute catarrh. While convalescing, on Jan. 5, 1876, a syphilitic ulcer, of doubtful character, appeared under the foreskin, and on the 7th, a rapidly swelling and highly inflamed bubo was observed in the right groin. Injected 15 minims of a 16-grain solution of the acid. He complained of the smarting from the caustic action of the solution, but it abated in a short time, and with that there was no further trouble with this gland. On the second day thereafter, another gland became inflamed, and was injected with 20 minims of an 8-grain solution, followed by immediate relief. On the 9th a third gland became involved, and was likewise injected on the second day thereafter. This ended the buboes, and he would have been returned to duty at once but for the chancre. As it was, however, he remained on the sick report until Feb. 2d, when there was only a slight trace of the glandular enlargements.

CASE VII.—Private J. McG., Co. D, Tenth infantry, admitted March 5, 1876, with chancroid and a bubo well advanced and very painful. It was evident that pus was present, and accordingly I aspirated the tumour and withdrew about a drachm of thick pus, when I injected 20 minims of an 8-grain solution of the acid. The relief was immediate and permanent. But for the chancroid, he would have been returned to duty on the third day; he was retained in hospital until the 21st of the month, when he was discharged entirely well.

CASE VIII.—Sarah M., coloured, aged about 30, married, called on me Nov. 5, 1875, with a large swelling on the left side of the neck beneath the angle of the jaw; had ulcerated gums, and a severe cold. It was evident that the gland was involved as a consequence of the bad condition of the teeth. The swelling was very painful, and, according to the usual progress of such appearances, the inflammation would end in the formation of a large abscess. I injected 20 minims of carbolic solution with immediate relief and arrest of the inflammatory process. Gradual absorption took place, and no signs of the enlarged gland were visible after ten days.

CASE IX.—Private L. M., Co. D, Tenth infantry, was admitted to the Post Hospital at San Antonio, June 10, 1876, with a bubo about two inches in length. Injected the gland and returned him to duty the next day. No further trouble. He had had chancroid some weeks before, but the disease was entirely cured at this time.

CASE X.—Private A. P., Co. D, Tenth infantry, reported April 19, 1876, with a bubo following balanitis. Bubo highly inflamed and well advanced towards suppuration. Injected 20 minims the next day with complete arrest of the morbid action. This man did not go on the sick report only to the extent of designating him for "light duty" with his company for the two days.

CASE XI.—Private P. R., troop M, Eighth cavalry, reported July 21, 1876, with a large bubo following very hard riding and exposure to a severe storm. There was no venereal disease apparent, and he denied ever having had any. The gland was deep seated, highly inflamed, and very painful. He could scarcely walk or stand erect. An injection of 20 minims of the usual solution was administered, which afforded prompt relief. He was retained in hospital until the 30th, when he was returned to his company entirely well. But for the fear that his riding might retard the cure he would have been sent to his company on the fourth day.

CASE XII.—Wm. S., private, Co. L, Eighth cavalry, admitted Aug. 4, 1876, with bubo following chancroid. Injected the gland and returned him to duty on Aug. 8th.

CASE XIII.—Recruit L., for the Ninth cavalry, reported Sept. 27, 1876, with chancroid followed by a painful bubo. Injected the gland and cauterized the ulcer with nitric acid and returned him to duty Oct. 16th. Relief of the pain in the bubo immediate, with perfect arrest of the inflammatory process.

CASE XIV.—M. W., a recruit for the Tenth cavalry, was admitted Oct. 10, 1876, with chancre, and remained in hospital until Nov. 12th. On the tenth day after his admission, a bubo appeared in the left groin. I injected it within a day or two, when the gland was scarcely more than one inch in diameter, but whether I failed to reach the interior of the gland because of its being deep seated or other cause, I cannot say; notwithstanding the operation, the inflammation continued, and the swelling increased as usual. The pain was benefited somewhat, but not to the extent that I expected. I then waited until the fourth day thereafter, when the gland had more than doubled its diameter, and was of such a size that I could easily grasp it, and I injected it again with complete success.

CASE XV.—Thos. J., recruit for the Tenth cavalry, reported at the sick call with a bubo, following apparently a gleet, on Oct. 12, 1876. I injected the gland on the 16th, and returned him to duty three days thereafter. The gleet was treated with injections of chloral hydrate.

CASE XVI.—Wm. L., recruit for the Tenth cavalry, admitted to the Post Hospital Oct. 30, 1876, with bubo following gonorrhœa. Injected the gland, and returned him to duty Nov. 9th. Retained him solely on account of the gonorrhœa.

These recruits had contracted their diseases in the North, and the full development of which only became apparent while *en route* to their frontier stations. As a rule, owing to the fatigue of travel, and their inability to give themselves any personal attention while shut up in the cars five or six days, and want of sleep, the inflammatory action was disposed to run a very rapid course. The ulcers and gonorrhœal discharges were of the most virulent character, frequently excoriating surrounding parts.

In the foregoing cases I have not reported any where spontaneous openings had taken place, yet I might well do so, as the beneficial effects of the carbolic acid when freely employed in washing out the abscesses, and following this by compression, either by weights of three or four pounds or by tight bandaging, were none the less marked.

For the last two or three years I have taken no notes of this class of cases, for the reason that they could be but repetitions of what I already had. I have, however, distinct recollections of many cases that have come under my care meanwhile, and to which I can only refer in general terms. In my private practice I have had three cases of glandular swellings in the region of the neck—one following measles, and one following *Rötheln*, and the other from no ascertainable cause; in all of which the glands were painful, and the condition such as experience shows generally end in suppuration. They occurred in girls aged between eight and twelve years. In all of these the pain and inflammatory action ceased in a few minutes after the operation, with a gradual resolution of the enlarged structures, ending at the expiration of twelve or fifteen days in complete removal of all traces of the morbid conditions in so far as external appearances were concerned. From 1876 to 1878 large numbers of troops, in addition to the regular command, were at San Antonio for greater or lesser periods of time, the aggregate amounting not unfrequently to three or four hundred men, embracing artillery, infantry, and cavalry. In that time scarcely a week passed without cases of adenitis in some of its various forms being under treatment; and in not a single instance did the operation fail to arrest the progress of the disease if performed before suppuration had been reached. Again, since I have been at this post, four cases have been admitted for treatment in hospital.

CASE XVII.—The first was admitted Sept. 22, 1881, with chancroid and a large bubo. The ulcer was treated with iodoform and the gland injected as usual. The gland was not very painful at first, but, with the reddening of the skin over it, which occurred on the fourth day after admission, it became tender; the operation was then performed with prompt relief of the pain, and arrest of the morbid condition. Oct. 8th he was returned to duty entirely cured, with scarcely a trace of the bubo remaining.

CASE XVIII.—The second case possesses more interest. Sergeant L., Regimental Band Tenth infantry, was admitted to the Post Hospital Nov. 16, 1881. His history showed that while absent on the expedition to the Yorktown celebration, in attempting to lift a heavy piece of baggage, he felt a sharp pain in the left inguinal region, and upon examination by the medical officer it was found that he had ruptured himself. The hernia was reduced without trouble, but tenderness remained in the seat of injury up to the time of admission. Meanwhile a truss had been procured, and several attempts made to adjust it, but without success, because of the soreness. An examination on admission revealed the existence of enlarged deep-seated lymphatic glands situated a little above, and outwardly of the hernial opening, but their size was not such as to induce much external prominence. The truss was abandoned, the man directed to remain in bed, saline laxatives prescribed, and the region painted with iodine. Notwithstanding this course the glands continued to enlarge, and their painful character became more pronounced. There was no venereal disease whatever present, and he claimed that he had never had any. On the sixth day after his admission the inflammation had extended so as to involve a congeries of glands, reaching from near the penis outward and upward in the direction of the anterior superior spinous process of the ilium for a distance of fully four and one-half inches. The whole group was more or less painful, but those lowest down most so. Three of the glands were separated from the others so as to be clearly defined by the intervening sulci. At this time I decided to inject three of the most active, and accordingly threw into each fifteen minims of the solution of carbolic acid of the usual strength after refrigerating the skin so as to admit of the proper manipulation. No pain was complained of. The next day I injected the fourth in the same manner. This ended the treatment of the buboes. The following day, that is, Nov. 24th, the pain and tenderness were gone throughout the whole tumour, and, but for the reported hernia, which I wished to examine more fully, he could have been safely returned to duty on the day following; as it was, he remained under observation until Dec. 6th, when he assumed his duties, and, up to the present, has had no further trouble.

It is well known that these glands often become inflamed and painful without, however, going on to suppuration; and that, at times, in the progress of the diseased action it is difficult to say in the earlier stages whether the termination will be in resolution or in the production of an abscess. Because of this, in the minds of some, doubts may arise as to the real value of these operative measures in arresting the morbid tendencies. Touching this part of the subject I present the following case:—

CASE XIX.—In June, 1878, Private M., Co. E, Tenth infantry, reported at the morning sick-call with a chancroid of a few days' standing, and with a bubo in the left groin. Of the latter he complained chiefly; and, as to the first, he had been treating himself in the hope of avoiding exposure. As the bubo did not seem sufficiently advanced to enable the injection to have the most certain results, I decided to wait until the next day before interfering with it, meanwhile directing the administration of a saline purgative, and the cauterization of the ulcer with nitric acid. At the morning hour he reported as directed. The gland had increased in size quite considerably, and the pain had interfered with his night's rest, as well as with his military duties. After the usual refrigeration I injected thirty minims of the standard solution of carbolic acid. In about fifteen minutes he came into my office and said the pain was all gone, and that he would like to go to his company; his request was granted. In a day or two he was sent out on escort duty and was absent ten days, during which time he had been compelled to ride on the outside of the stage-coach under arms, with no chance to give himself any personal attention. As a result the chancroid had assumed an aggravated aspect, and another gland situated just below the one injected was now highly inflamed, but had not reached the stage of breaking down into an abscess. The gland I had injected was painless, and reduced to about one-fourth the size when operated on. To satisfy myself that the virulence of the disease was such, that, if allowed to run the usual course, suppuration in the first instance would have been the result, I decided to treat this one in the usual way. I prescribed accordingly saline laxatives, and the internal administration of iodide of potassium, low diet, rest, and later poultices. The gland was deep-seated, and not until the fourth day did it appear to be in a condition favourable for discharging it. I then aspirated it, and drew off nearly a half ounce of thick pus when I refilled the cavity with thirty minims of a solution of twelve grains of carbolic acid to the ounce, and applied a firm compress. The second day I aspirated it again, washed it out thoroughly with the solution, and applied the compress as before. There was a little drainage through the opening made by the needle for three days, but no further operative measures were employed, and on the sixth day thereafter the chancroid was in a condition to admit of his resuming his company duties.

I have regarded this as in some degree a test case, and I think it is fair to presume that the first bubo would have behaved like the second, had its course not been interfered with; and I entertain no doubt, that had I treated the second as I did the first, the result would have been the same as with that.

Some care is required to insure certainty in reaching the central portion of the gland, and without this the effort may fail of its purpose. To that end, therefore, I have found it better to wait until the gland has attained to some size, and its stroma sufficiently distended to admit of the free permeation of the injection to all parts of its structure. I have injected them when quite small in the earlier stages, but generally, when I have done so, a second operation has been required, the reason being in my judgment that the gland is too dense for the injected fluid to reach all parts; and the further cause, perhaps, that the inelasticity is such as to force out the fluid immediately, thereby preventing its specific action.

It is also better to refrigerate the skin over the tumour, in order to diminish the sensibility and permit the gland to be firmly held so as to determine its size, and to ascertain the depth to which the needle must penetrate to reach its central parts, while an additional benefit is obtained in the relieving of the patient of any sense of apprehension of pain due to the operation. With some patients this is indispensable to success, for not infrequently, by the cringing of the lower abdominal muscles, and the raising of the leg at the same time, the bubo is placed beyond the firm support of the fingers, the needle thereby misdirected, and the fluid but partially thrown into the gland, or, perhaps, merely into the surrounding external tissues. Only failure could be reasonably expected in such cases.

As a rule, the depth to which the needle should be thrust can be determined by indicating approximately on it, two-thirds of the narrowest diameter of the tumour when firmly held between the thumb and fingers. Taking this measure as a guide, it will admit of the needle being introduced a little obliquely to the surface of the capsule, so as to make a valvular opening, thereby preventing reflux action; and this effect may be further assured by a momentary digital pressure following the withdrawal of the needle.

The average time my patients have had to forego their usual vocations, has not exceeded three or four days, but many will go on with their usual employments if assured they can safely do so; an assurance I have not hesitated to give, after ascertaining whether or not a second injection would be required.

The *rationale* of the treatment can be understood if we accept of the views of those who took part in the international medical discussions, which were to the effect, in general terms, that lymphadenitis, in all its forms, is the result of the absorption of septic matters from some neighbouring parts, hence, by destroying these zymotic elements, we remove the offending cause and arrest the morbid processes consequent thereon. But I am not sure that this is all of it; on the other hand, I am satisfied that the local anæsthetic action of carbolic acid is not a less important factor in the treatment. Many other antiseptics, such as iodine, boracic acid, chloride of zinc, corrosive sublimate, etc., all of which are very prompt in their antiseptic action, have been used, yet they have generally failed to check the inflammatory action, or to allay the pain; on the contrary the latter has been greatly augmented, becoming at times almost unendurable. Allaying pain is a necessary element in the treatment of any form of disease, and in so far as local effects are concerned, we have no agent equalling carbolic acid in this respect.

While not strictly coming under the heading of this article, yet being so nearly akin to it, I am disposed to refer to the necessity of an early aspiration of the buboes where matter has been formed. In this respect my own experience, as before stated, is fully in accord with M. Le Pileur's. In his recommendations, however, of injections of boracic acid and zinc chloride, in ordinary cases, while in those supposed to be due to venereal sepsis, nitrate of silver should be employed, I fail to recognize any advantages over carbolic acid, if we are to judge by results. Quite to the reverse, I aver that not a single case which I have treated in the series of years I have indicated hitherto, has lasted twenty-four days, the average of those reported by him. Bearing on this part of the subject, and at the risk of being criticized for attempting to adduce general principles in practice from a single case, but which is farthest from my purpose, I am constrained to refer briefly to the following case as indicating in some degree the relative merits of the different agents.

CASE XX.—Private A., Co. H, Tenth infantry, was admitted to the Post Hospital at Fort Wayne, May 26, 1881, under the administration of my predecessor, with chancroid and bubo. The latter was treated by applications of ice, with the effect of arresting the inflammation, so that he was returned to duty June 17th. About the middle of September, 1881, he was detailed as cook in hospital, when, soon after, the gland began to swell again. In the belief that there were some morbid matters in his system which had been "prevented from coming out," as he expressed himself, by the abortive treatment with the ice, he said nothing of his condition until spontaneous openings appeared, when he could no longer conceal it. At this time, Sept. 25th, he came under my care. The tumour was now four and a half inches in length, by nearly three in breadth, with openings appearing in three places; one in the middle and one at each extremity, the latter being three inches apart. It looked as though the whole intermediate space would slough very soon. An extensive cavity, two and a half inches deep, and reaching from one extremity to the other, was found on examination to have been formed, with a copious flow of pus issuing therefrom. I directed the steward to syringe it out thoroughly with a solution of 8 grains of carbolic acid to the ounce, and to cover the gland with a thick compress of carbolized oakum. The next day there was little or no change for the better, and the same was true of the appearance on the second and third days. Indeed, it was disposed to be very indolent. On the third day I directed it to be washed out in every part, by a 16-grain solution, and a compress of 4 pounds weight, made of a bag of shot, to be applied, with a pledget of the oakum a half inch in thickness intervening. The whole aspect was changed in twenty-four hours, and from this time a speedy recovery followed, and he was returned to duty on Oct. 10th, or on the fifteenth day. It was certainly an unpromising case, and one which, if treated with poultices, would have lingered for many weeks, judging by experience. I have frequently, in the thirty years past, employed iodine and nitrate of silver under similar circumstances, but I have never obtained so satisfactory results in the same length of time in a similar case from those agents, as in this instance, with carbolic acid, and it is only one of many which I could cite.

While there can be no question of the importance of early aspiration after pus is formed, considered in the light afforded by antiseptic experiences, it may be remarked that, in the smaller tumours, and in the larger before the stroma is broken down, the operation need not be carried on to the complete exhaustion of all the matter. A removal of a portion, and refilling the gland with the carbolized fluid, will generally suffice. Under such circumstances, there will often be a little drainage through the opening, perhaps for a day or two, of a thin watery pus, after which the activity of the morbid process will cease, and recovery soon follow. If one, therefore, has a pretty large hypodermic needle, both the operations of aspiration and injection may be done without removing the instrument. When the structure of the gland, however, and with that not unfrequently a considerable amount of surrounding tissue, has been destroyed with the formation of a large cavity, only the most thorough washing out with a four or five per cent. solution will avail, and this to be followed by very firm and exact compression. Without some such course the value of aspiration is often greatly impaired, and several subsequent operations may be required. It is well known that pus cavities are the more likely to heal at once, if, after the first discharge, the pyoid tendencies are destroyed, and the walls closely approximated.

These may seem small matters in detail, and scarcely worth mentioning, yet they are often of the highest importance in securing the most favourable results, alike as to the length of time in recovery, the prevention of burrowing sinuses, and subsequent disfiguring adhesions; and further, if we do not attend to them, we may frequently meet with vexatious disappointments when we had good reason to hope for success. The injection of the abscess is not alone sufficient. It must be followed by the most scrupulous attention in compression, and the appliances resorted to for that purpose should be fitted with the utmost exactness and firmness, and yet be comfortable to the patient. It is not always easy to do this, and sometimes the ingenuity of the medical attendant is severely taxed to meet the requirements.

Pursuing this course as to details, I can truthfully say that I have not had to use a lancet to open an abscess in the lymphatic glands arising from whatever cause, or prescribe a poultice to be applied to one, since I adopted this mode of procedure; nor have I had in the time any lingering abscesses, disfiguring adhesions, or unsightly scars to regret.

In so far as the abortive treatment is concerned, I may say further in support of my own experience, that at the meeting of the Texas State

Medical Association, held at San Antonio in 1878, I invited the attention of the members of that body to this subject in some desultory remarks, and that subsequently several of the gentlemen informed me that the treatment had been equally favourably in their experience. How it will answer in those cases, however, where the deposits are of a caseous character, I am not prepared to say, for I have had none of that form to treat in the time indicated. In respect to such, then, I can only say experience must be our guide as to the value of carbolic acid in arresting the morbid action in its earlier stages; as to the later, there can be no reasonable doubt.

A few words in regard to compression. As generally understood, when compresses are advised, it means the employment of bandages as recommended in standard works on surgery. A difficulty in their use, however, arises in the adjustment in such a manner as to secure uniformity in pressure from one dressing to another, and their retention in place; and without this uniformity, any mode of antiseptic treatment of deep-seated abscesses and sinuses may be a failure. For the inguinal and abdominal regions I have obtained far better effects from the employment of a compress made of a bag of shot weighing three or four pounds, and, in its absence, a bag of dry sand, with an intervening layer of carbolized oakum, tow, or absorbent cotton, to take up the discharge.

For the axillary and cervical regions the Irish potato, or other similar substance, trimmed properly to fit the location—which can be easily done—then enveloped in a strip of thin muslin, the ends of which have been divided into three or four parts, and when adjusted these ends carried in the direction in which the pressure is required, and passed through loops of rubber bands of from one-fourth to a half inch in width, such as are used in stationery, and secured in position by tapes, answer the purposes best. The elasticity of the bands keeps up a nearly uniform pressure, which is not materially varied by changes of position or movements of the body, while the readiness with which the direction of the pressure can be altered, as circumstances require, is of great advantage. This mode of dressing is light, elastic, firm in position, easily applied directly to the abscess without interfering seriously with other parts, is constant and effective in any locality, variable in any direction without removal, and comfortable to the patient. In these respects no ordinary mode of bandaging is at all comparable to the elastic. The ease with which the potato, or other esculent root, can be fitted to any surface or cavity, and that only, and the thickness varied according to the degree of pressure required, gives it an advantage over any other substance likely to be at hand. In order to keep the compress from slipping, the muslin envelope should be given a half-turn close to each end of it; this also prevents the strips from becoming loosened by the tearing of the envelope. The object of the antiseptic injections is to correct and arrest the pyogenia; and after this the efforts should be directed to the coaptation of the walls of the cavity, and to secure immediate union. To this end I believe that any one who will give this mode of applying compresses a fair trial will be satisfied thereafter with none other.

The strength of the solution employed has ranged from 4 grains to 16 grains to the ounce of water. The weaker solutions are best adapted to cases in childhood, but are not prompt enough in allaying pain in the more highly inflamed cases in adults. A solution of 8 or 10 grains to the ounce, and the injection of from 10 to 40 minims of this strength, will ordinarily meet the requirements for abortive results. The stronger solutions are sometimes, for the moment, unnecessarily painful from their caustic action. An 8-grain solution is the most convenient, of which 20 or 30 minims may be injected.

In mammitis, this strength has been used in a single case with prompt arrest of the inflammation and cure of the disease. As I have had but the one case, however, to treat since adopting the antiseptic method, I have not thought it desirable to include it in detail in this report, yet I have no doubt of its efficiency in all cases where the morbid action is circumscribed, and does not involve the whole mammary gland, and I shall not hesitate to employ carbolized solutions when occasions indicate their use, with the same confidence as to results, that I now do in other forms of adenitis.

FORT WAYNE, DETROIT, MICHIGAN, Jan. 5, 1882.

ARTICLE IV.

LARGE PLEURITIC EFFUSION IN THE RIGHT SIDE WITHOUT NOTABLE DIMINUTION OF VOCAL RESONANCE AND FREMITUS. DIFFUSED BRONCHOPHONY IN CASES OF PLEURITIC EFFUSION. REMARKS ON THE VALUE OF BACCELLI'S SIGN ("PECTORILOQUIE APHONIQUE") IN DETERMINING THE NATURE OF THE EFFUSED FLUID.

By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in Bellevue Hospital Medical College, New York.

NOTABLE diminution or suppression of vocal resonance and of vocal fremitus are signs justly relied upon in the diagnosis of pleuritic effusion. They are generally reliable. It is, however, important to take cognizance of the fact that in rare instances they are apparently wanting. This fact was exemplified in the following case:—

A man, 31 years of age, was admitted into Bellevue Hospital January 9, 1882. He had worked very hard in his occupation (butcher) for several weeks, and had been much exposed to the weather. On the 3d inst. he had chilly sensations and acute lancinating pain in the right side. He had kept the bed from that date to the date of his admission. On his admission, flatness on percussion on the right side extended from the base of the chest up to the level of the nipple, with vesiculo-tympanitic resonance above this level. The respiratory murmur was vesicular above and wanting below this lèvel. The vocal resonance and fremitus were apparently normal over the whole of the right side of the chest.

On the 13th of January, there was flatness on percussion over the whole of the right side of the chest. Over the scapula and in the infra-clavicular region, the respiration was bronchial, and there was marked bronchophony. Over the remainder of this side there was absence of respiratory murmur, *but the vocal resonance and fremitus were somewhat greater than on the left side.* The circumference of the right side measured 1–2 inch more than that of the left side. The apex of the heart was 1½ inch to the left of the left nipple. An exploratory puncture showed the presence of serous liquid within the right pleural cavity.

On the 19th of January, the physical signs remained unchanged, and forty ounces of serum were withdrawn by aspiration. The aspiration was discontinued owing to the distress of the patient and cough, considerable liquid evidently remaining within the chest.

January 31, absorption of the liquid had taken place. The respiratory murmur was heard quite to the base of the chest. The vocal resonance on the right side and the vocal fremitus were greater, as compared with the left side, than prior to the removal of the liquid, but the difference was not marked. Bronchophony at the summit had disappeared, except that in the interscapular space near the ridge of the scapula the voice was slightly bronchophonic. That the latter, in this case, belonged to health, was shown by the absence of any symptoms denoting pulmonary disease. The patient on this date was convalescent.

It is to be remarked that in this case the vocal resonance below the scapula and the infra-clavicular region was not bronchophony conducted from the compressed lung. It had the characters of the normal vocal resonance, as distinguished from those of bronchophony. It was accompanied by a proportionate amount of fremitus. Comparing these signs on the two sides during the continuance of the effusion, and after its removal, there was evidently some diminution caused by the liquid, but not enough diminution to render the signs on the two sides equal.

I do not undertake to explain the preservation of vocal resonance and fremitus, in this case, when the chest was filled with liquid. It is certainly a very rare exception to the rule. I report it as a clinical fact. Something may be due to the patient's voice, which was notably strong, and of low pitch.

Cases of large pleuritic effusion, in which bronchophony is heard with more or less intensity over the whole of the affected side, are not very infrequent. Before such cases have come under observation the intensity and the diffusion of the bronchophony are apt to occasion in the mind of the physician doubt as to the diagnosis, although other physical signs show conclusively the presence of liquid.

Dr. Baccelli, an Italian physician, maintains that by means of the whispered voice the nature of the liquid within the chest may be ascertained. According to his observations, if the liquid be serous, the whispered voice is well transmitted through the liquid, and is pectoriloquous in character. On the other hand, the voice is not well conducted if the liquid be purulent. Geneau de Mussy sustains the correctness of these observations. At the late meeting of the International Medical Congress, Dr. R. Douglas Powell, of London, submitted a series of cases, some of which sustained and others conflicted with the observations of Baccelli. It so happens that in the case of empyema which I last saw, the loud and the whispered voice were conducted over the whole of the affected side of the chest with such intensity that there had been doubt as to the presence of liquid, although the patient had been previously aspirated. The aspiration was repeated and a very large quantity of pus withdrawn. In the case reported in this paper the liquid was serous, and although the vocal resonance and fremitus were but little diminished, there was no diffused conduction of whispering bronchophony or pectoriloquy. It is not of much practical importance to collect clinical facts with reference to the law laid down by Baccelli, inasmuch as the nature of the liquid, in cases of pleurisy, can be ascertained in a minute by an exploratory puncture, and there can be no objection to this procedure for that purpose.

ARTICLE V.

PROGRESS OF OBSTETRICAL SURGERY. ABDOMINAL DELIVERIES IN THE UNITED STATES DURING THE YEAR 1880. FIVE CÆSAREAN AND THREE PORRO-CÆSAREAN OPERATIONS.

By ROBERT P. HARRIS, A.M., M.D., of Philadelphia.

THE accompanying record would have been given to the medical profession of our country at an earlier date but for the fact that all the important points in the cases could not be obtained prior to the commencement of the current year. As reports of Cæsarean operations are seldom published promptly, and are rarely complete in all respects, it requires time to obtain them in a condition to be of value in a statistical sense. I stated some time since that we were retrograding in this country in Cæsarean results, as compared with the days when anæsthetics were not in use, but am happy now to find that in the year 1880 there was a decided change for the better, three women and four children having been saved by five classic Cæsarean sections—that is, 60 per cent. of the women and 80 per cent. of the children. During the same year Italy saved 4 Porro cases out of 11; Germany, 2 out of 5; Austria, 3 out of 3; and France, 1 out of 2.

Great changes have been produced in the minds of physicians and the public by the marvellous results attained in ovariotomy by a few operators in Great Britain and America; and this diminished mortality has largely increased the area of abdominal surgery, so that operations are now performed daily which were at one time regarded as unjustifiable, on account of their great fatality. The prejudice that at one time existed against ovariotomy has given place to a feeling of confidence in the results of much more grave operations upon the abdominal and pelvic viscera. Perfection in abdominal operations has by no means been reached, and we may look for increased skill and success from year to year, as new methods of operating become tested by experience, and are made more widely known through the medical journals.

Many improvements have been made in ovariotomy since its introduction by Dr. McDowell, and the operation of to-day in the most careful hands is quite different from what it was twenty years ago, when men were wedded to the use of the clamp, and afraid to employ the hæmostatic measures now regarded as so important within the abdominal cavity. Fortunately, for the benefit of humanity, the possibilities of the operation, under skilful gynecologists in saving life, have been pretty well ascertained, and the mortality is by no means very high, as compared with some other capital operations. The antiseptic management of Lister, the drainage tube, the uterine suture, the cleansing of the abdomen from blood and other fluids, the internal ligation of the pedicle of parts excised, the use of the hæmostatic pincers of Péan, the pocketing of the pedicle, the excision of the pedicle by the actual cautery, and the hæmostatic effect of hot water, have all contributed to secure a higher percentage of recoveries after abdominal operations in the cases of women.

As might have been naturally anticipated, the improvements in abdominal surgery are commencing to show their effect in a diminished mortality after the Cæsarean operation. Antiseptic surgery has been made use of in a few cases under the old method, and has been almost universally employed in Porro's modification. The latter having been of recent introduction (1876) has had all the advantages of the latest improvements in operations upon the abdominal cavity, and those have been generally most successful who have adhered closely to the directions and followed the example of its originator. Like the old operation, promptness in the use of the knife secures the largest proportion of successful results.

The introduction of the Porro modification in Europe has had the effect of changing very materially, and for the better, the results of Cæsarean deliveries in large maternity hospitals, especially those of Vienna and Milan. To save six women in succession with their children, as has been done in the Santa Caterina Hospital of Milan and

Krankenhaus of Vienna, speaks well, not only for the care and skill of the three operators in each hospital, but for the operation as it was originally devised by the Pavian professor. Although the new method has been adopted in the Italian and French lying-in hospitals, it has by no means supplanted the old operation in the country and in private practice in small towns of France and Italy. It is well known both here and in Europe that the results of the Cæsarean operation have been so far less discouraging in small towns and the open country than in large cities, and especially in the hospitals of the latter. This fact has had its influence even in Italy, whence we occasionally receive reports of very successful operations by the classic method performed antiseptically.

The number of assistants required by the Porro method as compared with the old operation must necessarily limit its application in sparsely-settled districts, such as we have an abundance of in the United States; hence the importance of diminishing the risks of the latter by prompt action, and the adoption of some of the improvements which have so greatly reduced the death-rate after the performance of ovariotomy. To diminish the loss by the Cæsarean section, it is highly important to disseminate a knowledge of the improvements which have been made in the method of operating. The first and most important step is to make the operation one of anticipation and choice, rather than of dire necessity and last resort.

Thus far, but comparatively few Cæsarean sections have been made under the carbolic spray. Those that have had the Lister treatment fully carried out, appear to have done better on the average than where it was not employed. The most important improvements in the operation appear to have been the use of the wire suture, and the thorough cleansing of the abdominal cavity by sponge-mops, moistened with carbolized water. The form of uterine suture that has been thus far most successful in the United States is that of virgin silver wire, twisted twice, cut closely, and bent down over the line of the incision. This form of suture was first employed, and with success, in 1852, upon a woman who was still living when last reported. It is likely in time to be supplanted by pure silk, which, it has been discovered, will in time, as an animal substance, entirely disappear by absorption. Horsehair has also this advantage of disappearance, but is objectionable on account of its stretching when wet. The wire makes a very secure stitch; becomes encysted; does not blacken and turn up as in the vagina; and has been found unaltered in appearance at the end of five years. In the selection of silk for sutures, care should be taken to obtain that which has not been mixed with sea-island cotton, which is itself indestructible; or in any manner coloured with dye. We hope no one will again commit the error of employing carbolized catgut as a suture within the abdominal cavity, as it will not hold its knot where kept moist, and will, besides this, stretch. Fine hemp has been used with success in sewing up the uterus in one case, but is alike permanent, with the silver wire.

The drainage tube of Chassaignac has been used also to advantage, but its value is still to be tested in the Cæsarean operation. In the Porro modification, hysterectomy, and in ovariotomy with extensive adhesions, it no doubt enables the operator to remove sanguineous fluids, which might give rise to septic poisoning. As soon as the tube ceases to discharge, it should be removed; which will generally be the case in a few days. Where the abdomen has been well cleansed and the uterus closed by sutures, there is usually but little call for drainage, unless the uterine wound should gape open, in which event the want of it is apt to give rise to septic peritonitis or septicæmia.

Usually there have not been sutures enough in the uterine wound, and where post-partum relaxation has occurred, the parts have gaped between them: from 6 to 10 interrupted sutures should be inserted. Attention having been called to the value of sewing up the uterine wound, we find the method much upon the increase, it having been used fifteen times in the last ten years. Of the last eight cases thus treated, four recovered; but of the preceding seven, only two. The nine deaths can be readily accounted for from the prior condition of the women, with two exceptions. Thus, Case 1, was a dwarf, two days under the care of a midwife, and one under an accoucheur, who performed craniotomy. Case 2, carried a putrid fœtus, and was a month over her time; she was also the subject of a uterine fibroid. No. 3, was a girl of 15, treated in hospital, and subjected to repeated trials with the forceps; was in labour six hours, and died of exhaustion and septicæmia in two days. There was no appearance of peritonitis; the uterus was soft and dark coloured. No. 4, was a dwarf of 3 feet 4 inches, and weighed 65 pounds; was operated upon early, and died in five days of peritonitis. No. 5, had an abscess in the groin, and a bad cough following coxalgia; forceps used; almost died upon the table; was badly nursed and fed, and died of exhaustion in fifteen days. But for her bad health she should have recovered. No. 6, was a dwarf of 4 feet 3 inches, in labour 24 hours; was sutured both in uterus and abdomen with carbolized catgut; died on seventh day, of peritonitis and heart-clot; both wounds gaped open from the giving way of the knots. No. 7, was in labour three days; two under a midwife; died in 36 to 40 hours, presumed from hemorrhage; no autopsy. No. 8, was in labour over 30 hours, and died in 33½ hours from septicæmia; one suture only, used. No. 9, was in labour 4 days with no attention; operation under carbolic spray; died of peritonitis; will be more fully reported further on.

Statistics are of very little value viewed simply in a mathematical sense. We must examine and weigh the peculiar facts of each case, and draw our conclusions from those that have had the proper advantages to favour recovery. To have failed in nine out of fifteen sutured cases appears to be a very bad showing for the method, as this is a greater mortality than the average of all the cases in the United States; but when we examine the records minutely, we are only surprised at the success in some of the six that recovered, as one was in labour three days, and another seven. The other four were, with one exception, operations of election; the exception being one of necessity, as the operator had in error perforated the gravid uterus of a single lady in an ovariotomy.

We have now to present the special, and somewhat encouraging, record of the year 1880. The numbers of the cases are those which belong to the entire record of the United States in chronological order. It is possible that some unreported operation for the year may have been omitted; if there is one such, the writer would be glad to have the record sent to his address.

CÆSAREAN CASE 119, Toledo, Ohio, May 22, 1880; operator, Dr. S. S. Lungren.—Woman, 34, rachitic, operated upon in a previous labour 5 years before (May 8, 1875). In labour only 3 hours; Fallopian tubes ligated; uterine wound sutured with silver wire; woman alive and well in February, 1881, when she was said to menstruate without pain. There are now two rows of silver sutures in her uterus. An abdominal drainage tube was used in this case for three days.

CASE 120.[1]—Whitefield, Coos County, New Hampshire, June 16, 1880; operator, Dr. George S. Gove. Woman 34, rachitic, 4 feet high, and 82 pounds in weight; superior strait reniform; conjugate diameter 2 inches; in labour 32 hours; was exhausted, restless, and feverish at the time of the operation; died in 16 hours of nervous shock, and prostration from vomiting. The child was saved. No uterine sutures were used (case not yet published).

CASE 121.[2]—New Prospect, Choctaw County, Mississippi, June 30, 1880; operator, Dr. A. S. Kirk, of Louisville, Miss. Woman, black; 26; no deformity; in labour with her third child: a day before Dr. G. L. Terrell was called in to replace a midwife in charge; found right arm protruding, and the fœtus impacted in the pelvis; woman at the time of operation exhausted and sinking; labour pains had ceased; operation performed 30 hours after commencement of labour; child found dead; uterine wound not sutured; abdominal wound dressed with dilute carbolic acid. Woman recovered, and was up and at work in her house in a month. On July 16, 1881, she bore another child naturally.

This is the twelfth case in the United States in which the Cæsarean operation has been performed for the delivery of the fœtus in a transverse position. Nine of the twelve operations saved the women, and one, the child, the pelvis being too small for it to be impacted in it fatally. In one case the pelvis was much deformed; woman saved. In 3, the pelves were small; C. V. from 3 to 3½ inches, all saved. In 8, there was no deformity; 5 women saved; all of the children destroyed by uterine pressure. The time in labour of the 12 varied from 1 to 7 days. But 1 of the 12 had ever been rachitic; 5 were operated upon in the open country; 5 in small towns; and 2 in small inland cities.

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[1] Will be reported fully by the operator.

[2] Am. Journ. Obstetrics, Jan. 1881. Also communicated by Dr. Terrell.

CASE 122.[1]—Near Stockwell, Tippecanoe County, Indiana, November 6, 1880; operator, Dr. Moses Baker. Woman, white; 34; wife of a farmer; 150 to 160 pounds in weight; large immovable fibroid in the pelvis, and a second tumour the size of a fœtal head attached to the fundus uteri; slight pains for 60 hours, and membranes ruptured 3 days; state of patient good; pulse 80; very hopeful of recovery; phlegmasia dolens appeared in the calf of left leg on the eighth day, and whole extremity swollen by the twelfth day; up and out of bed in 30 days; child lived. Operator's hands, instruments, ligatures, sponges, and cloths all carbolized. *Uterus sutured with four stitches of carbolized silk.*

Case 123.[2]—Prescott, Arizona, December 7, 1880; operator, Dr. F. K. Ainsworth. Woman, 35; an Indian squaw of 4 feet 10 inches, with conjugate of $1\frac{3}{4}$ and transverse of $2\frac{7}{8}$; had been in labour without attention for 4 days, and was much exhausted; operation under carbolic spray; all instruments carbolized; Lister dressing; placenta under line of incision; hemorrhage profuse; abdomen cleansed of blood; *uterine wound closed with four silver wire stitches.* Peritonitis set in at the end of the third day and caused her death. Child saved.

Rickets is said to be very unusual in Arizona. There have been two Cæsarean operations, and the only ones on record, performed upon Indian women within a year; the second was at Bar Harbor, Maine, in August, 1881, by Dr. George McClellan, of Philadelphia; squaw also died.

It will be noticed that the uterus was sutured in 3 out of the 5 cases, with a saving of 2; that Lister's method was used in 2 cases, and that phlegmasia dolens, which attacked 2 of the 3 American Porro cases, occurred in one case. This has been a very rare complication of the Cæsarean section, here and in Europe; as it is also a rare sequela of ovariotomy and Porro's operation.

The American Porro cases of 1880 have been already reported. The first operation was by Professor Isaac E. Taylor,[3] New York, April 8, 1880; pedicle dropped in; phlegmasia dolens of both legs; woman died on 26th day of cardiac thrombosis having wilfully disobeyed orders in sitting up out of bed; child saved. Second operation by Prof. D. Hayes Agnew,[4] Philadelphia, April 16, 1880. *Müller's modification* employed; woman died of vomiting and exhaustion in 5 days; child a 6 months' fœtus; woman in an almost hopeless condition when operated upon. The third operation was by Dr. Elliott Richardson,[5] Philadelphia, September 22, 1880, *Müller's modification* used; phlegmasia dolens of one leg; woman and son alive at last report.

There were then for the year, as far as has been ascertained, 8 abdominal deliveries in our country, saving 4 women and 6 children. The highest number in any previous year was 6, in 1875, with 2 recoveries. There were also 5 Cæsarean operations with 3 recoveries in 1867.

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[1] Am. Journ. Obstet., July, 1881.

[2] Med. Bulletin, Phila., March, 1881. Also communicated by Dr. James S. Kennedy.

[3] Am. Journ. Med. Sci., July, 1880.

[4] Agnew's Surgery, vol. ii.

[5] Am. Journ. Med. Sci., Jan. 1880.

The full value of the Porro operation has not been as yet determined, either here or in Europe. It is established that it will save a large percentage of cases regarded as "favourable" at the time of operation; and that as a hospital measure it is much less fatal than the old method. This is proved correct, by the record of the maternities of Milan and Vienna, where the contrast with the old operation is much to the credit and advantage of the new. The Santa Caterina of Milan has saved 6 women out of 8, and the Krankenhaus of Vienna 8 out of 11; the last six operations in each, having been successful. All of the fœtuses were removed alive. One more success in Vienna will bring each hospital up to 75 per cent. of women saved.

329 S. TWELFTH STREET, PHILADELPHIA.
January 25, 1882.

ARTICLE VI.

A SECOND INFECTION FROM SYPHILIS—SYPHILITIC RE-INFECTION.

By F. R. STURGIS, M.D., Professor of Venereal Diseases in the University of the city of New York (Med. Dept.), Visiting Surgeon to Charity Hospital, B. I., etc etc.

M. P., æt. 35, entered Charity Hospital for the first time in Oct. 1878, with two ulcerations, which the patient stated came on three weeks after coitus. They appeared on Sept. 20, 1878. One was seated on the corona glandis near the frænum, the other on the free edge of the prepuce. Both were half an inch in diameter, and were indurated. He also had a fluctuating bubo in the right groin, which he said came on five days after the appearance of the ulcers. The sores were touched with pure carbolic acid, and subsequently dressed with iodoform, the bubo was opened, and under poulticing and simple dressing rapidly healed. On Nov. 26, 1878, a macular syphilide appeared on the chest and arms, which, in some places, became maculo-papular. Only the post-cervical glands were indurated. The patient was put upon the mixed treatment, and on Dec. 9, he was discharged much improved.

On January 9, 1879, he was re-admitted to the hospital suffering with osteocopic pains in the legs, arms, and head, and with an iritis of the left eye. Adenitis universalis. He had an itching papular eruption, due to phtheiriasis. Atropia was used for the eyes, and a mercurial pill of blue mass and iron was given internally. On Jan. 19, the mercury was discontinued, and on the 21st, the iritis had almost disappeared. The atropine was now discontinued, and he was placed upon the iodide of potassium in increasing doses for a short time, on account of the osteocopic pains which very decidedly improved in one week. He was discharged Feb. 6, 1879, improved.

Re-entered the hospital April 1, 1879, with a miliary papular syphilide of the face and chest. Adenitis universalis still present, the right epitrochlear and post-cervical glands were especially indurated. There were copper-coloured stains on his shoulders and buttocks (probably due to his old phtheiriasis), and a synechia of the pupil of the left eye. Had no alopecia nor osteocopic pains until April 8, when he was seized with violent pains of the head and body, and a recurrent iritis of the left eye. He was then placed upon an internal treatment of mercury and iodide of potassium.

On May 1, the left eye had recovered, but the right one was now involved in the same trouble. Leeches were applied to the temple, and the mercurial was increased. On June 5, his symptoms having disappeared, he was discharged.

The patient was not seen again for fifteen months, when on Nov. 29, 1880, he re-entered the hospital with two ulcers on the penis, one on the dorsum of the mucous membrane of the prepuce, the other on the right side of the frænum. He declares, that from June, 1879, to Oct. 27, 1880, he had had no sexual intercourse whatever, but between the latter date and Nov. 8, 1880, when the ulcers appeared, he had five. The ulcers appeared three days after the last coitus (Nov. 5, 1880), and presented the following appearance. The one on the dorsum was superficial, red, granulating, and had a thin, scanty secretion; the other, near the frænum, which invaded the glans penis, fossa glandis, and inner lamella of the prepuce, was slightly undermined, and secreted a scanty amount of pus. *Both ulcers were indurated*, the one on the dorsum penis to a marked degree. In the right groin were cicatrices of old suppurating buboes; in the left groin was a brawny glandular swelling extending for 2½ inches along the genito-crural fold. On the trunk (front and back), thighs, and buttocks was a macular eruption of a dark-brown colour. Anterior and posterior cervical and epitrochlear glands were indurated. No iritis, sore throat, or osteocopic pains were present. In the early part of December, auto-inoculation was successfully performed with the matter taken from the ulcer near the frænum. The pustule of inoculation was very small and short-lived. He was placed upon expectant treatment, and on Dec. 21, it is noted that the sores had entirely healed, leaving decided induration behind. In the left groin, at the apex of the glandular swelling, was a spot of softening, 1½ inches in diameter, over which the skin was thin and reddened, not painful on pressure, and without fluctuation. Reports, in addition to other symptoms, hemicrania, with pains extending down the jaws and neck. The fauces were congested, but no mucous patches were present. Placebo.

Dec. 28. For the past few days nocturnal cephalalgia and pains in ribs and sternum have been very marked. The eruption was not so vivid and the induration of the penis was slightly less. Fifteen grains of the iodide of potassium thrice daily and ten-grain Dover's powder once in the twenty-four hours were given until January 11th, when they were stopped as the pains had disappeared.

Jan. 18. The induration of the penis was nearly gone and the inguinal and cervical adenitis much less. The eruption was very nearly gone. There were no mucous patches of the throat or air-passages. No pain in the throat nor aphonia.

Feb. 9. Induration of the penis just perceptible. Adenitis as on January 18th. The nocturnal hemicrania and osteocopic pains have returned, and in addition he complained of a severe pain at the junction of the xiphoid cartilage and the gladiolus sterni, and of precordial pain. Upon examination of the chest a marked systolic souffle was heard at the apex and base of the heart, and also, but to a less extent, over the carotids. Mercury (blue mass and iron) was given for the first time since his last entrance.

14*th*. Symptoms unimproved. The protoiodide of mercury, in one single dose of half a grain, and the iodide of potassium, in two doses of thirty grains each, were substituted for the blue mass and iron, with the effect of relieving the pains in a few days, when the mercurial preparation of February 9th was resumed.

22*d*. The anæmia was less and the cardiac and carotid souffle perceptibly diminished. The induration of the initial lesions was very soft and hardly perceptible. The osteocopic and intercostal pains had disappeared. Mercurial unchanged.

March 8. The pains reappeared on the 6th and continued until the 25th, when they disappeared again. The record states that no traces of his syphilis are left, and this state of things lasted until April 14th, when he was discharged, much improved.

To sum up the points of the case. We find the history of a man, who, apparently free from previous disease, enters the hospital with two initial lesions, followed by a macular syphilide, osteocopic, and muscular pains, and a double iritis. Under treatment, which extended over eight months, his symptoms entirely disappeared and remained absent for fifteen months from the last date of his taking medicine. He then enters the hospital again with a couple of lesions of the genitals, which appeared three days after coitus, no other connections having been indulged in for a period of five months. At the time of his entrance these ulcers were already a month old, and presented the appearance of initial lesions. Auto-inoculation practised with the matter from one of these ulcers produced an apparently positive result, but it should be noted that the resultant pustule was short-lived, and did not have the characteristics of the simple venereal ulcer. It resembled rather the inoculations produced by the secretion of the initial lesion upon syphilitic persons, as instanced by Pick, Reder, Kraus, Henry Lee, and others. This was followed by a macular syphilide, osteocopic pains, and the other symptoms of an early syphilis. In order to allow the full development of the disease, mercurial treatment was not instituted until the symptoms had fairly developed, and these disappeared shortly after it was commenced.

This question of the possibility of a re-infection by syphilis is a very important and interesting one, touching as it does upon the possibility of a cure of the disease, for it is generally believed that, while the patient is under the influence of the first infection, he is not obnoxious to a second. Cases have been reported in which two infections have taken place, but many of them, upon a careful analysis of the symptoms, prove to have been but a further development of the disease, and not a true fresh infection. The general history in such cases is that a fresh initial lesion appeared accompanied or followed by a pustulo-crustaceous eruption. The correct explanation of this supposed initial lesion is that it was an ulcerating gumma of the genitals, and the pustulo-crustaceous eruption would be a necessary and proper concomitant. In order to prove a second infection it would be necessary to prove that the initial lesion was followed by the early symptoms of syphilis, such as macules or maculo-papules, and the immediate appearance of pustules or pustulo-crustaceous eruptions would throw doubt at once upon the accuracy of the diagnosis. In this case nothing was done to interrupt the natural course of the disease, in order to allow any symptoms whatever that might recur to fully develop themselves, and it is noticeable that what did appear belonged to the early and not to the late stages of the disease. It should be remembered that fifteen months had elapsed without any symptoms appearing, during which time, had the first disease still been active, they (the symptoms) would, doubtless, have manifested themselves. I believe, without a question, that this is a case of syphilitic re-infection ; a condition of things by no means common, notwithstanding what many syphilographers would induce us to believe.

A very pertinent question in this connection is, whether the second attack is lighter than the first, and to this question it may be said that, as a rule, it is. In this case the second macular eruption was lighter than the first, and the second attack was not accompanied, as was the first, with an iritis. It will be understood, of course, that I do not consider the reported cases of initial lesion followed by late syphilis to be genuine cases of re-infection. As a rule, a second attack of syphilis seldom goes beyond the earlier and milder forms of the disease, the previous attack having conferred a partial though not complete immunity to the patient's receptivity to a fresh infection, analogous to what we find in cases of a second attack of variola and varioloid.

I have published the case, not only with regard to its being a second infection, but also because it presented many features which were unusual. The ulcers of the second attack probably began as chancroids, that is to say, the patient received a twofold infection, or, as the French school, following M. Rollet's nomenclature, persist in calling it, a "mixed chancre," but this successful auto-inoculation, which was practised after the ulcers were a month old, was due, not to chancroidal matter, but to the fact that the skin of syphilitic persons is capable of being irritated into a fictitious pustulation by the secretion of an initial lesion.

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ARTICLE VII.

TRUE ANEURISM OF THE BRACHIAL ARTERY AT ITS UPPER THIRD CURED BY COMPRESSION MAINTAINED FOR TEN HOURS BY MEANS OF A CONICAL PAD, WITH A RÉSUMÉ OF THE LITERATURE OF THE SUBJECT.

By L. EMMETT HOLT, A.M., M.D., of New York, late House Surgeon to Bellevue Hospital.

IN consulting the literature of brachial aneurism, arising from other causes than traumatism, one is struck at the outset with the extreme rarity of recorded cases. John Hunter does not mention it at all. Astley Cooper[1] says: "I do not recollect to have seen a case of aneurism from disease of the brachial." Hodgson says:[2] "those morbid alterations in the coats of arteries which predispose to the formation of aneurism are rarely met with in the brachial or its branches. . . . . I have never seen an aneurism of the arm which was not produced by accidental violence." Crisp[3] tabulates five hundred and fifty-one cases of aneurism of all varieties, in which there does not appear a single case of spontaneous brachial aneurism. Alluding to it he says it is extremely rare.

Scarpa[4] reports a case of his own (Case V.) and refers to one by Flajani (Case XIII.). Birkett, who reports Case VII., says he had searched the records and inquired among his professional friends, but was unable to learn of another case. Sir Benjamin Brodie, who saw this with him, had never seen one.

Broca[5] in his tables mentions twelve aneurisms of the brachial, but they were all of traumatic origin.

Liston[6] says: "disease of the coats of the arteries of the upper extremity to a great extent is not known, and very few cases of true aneurism below the axilla are mentioned. I have treated but one such case" (Case XI.). Coming down to more recent authorities we find that it is barely alluded to by Holmes, Hamilton, and Bryant.

Erichsen[7] says: "spontaneous aneurism rarely occurs below the axilla, but may be met with at any part of the upper extremity." He alludes to four published cases, but does not mention any of his own.

Gross[8] says: "spontaneous aneurism of the brachial is extremely uncommon. I do not believe it has ever been noticed in this country."

Ashhurst does not mention a case. Agnew relates Case IX. as his only experience upon the subject.

The first case related below came under my own observation last summer. After a very careful search through the literature of the subject, I have been able to get together from all sources thirteen other cases of brachial aneurism which seemed to be of spontaneous origin, *i. e.*, not directly traceable to a wound or injury of the vessel. In some of these cases, slight exciting causes are stated to have been present, but that fact does not seem to me to be sufficient to exclude them from the number. There are very few surgical diseases which the patient does not attribute to some antecedent strain or fall. A shadow of doubt is thrown upon one or two of the cases on account of the brevity of the histories given. It is noteworthy that only three of the thirteen cases, Nos. II., III., and IX., were observed in this country.

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[1] Surgery, p. 78.
[2] Diseases of the Bloodvessels, Lond., 1847.
[3] Diseases of Arteries, p. 338.
[4] Sur l'Anevrysme, Paris, 1809.
[5] Anevrysmes et leur Traitement, Paris, 1856.
[6] Surgery, p. 144, ed. of 1838.
[7] Surgery, vol. ii. 140, ed. of 1878.
[8] System of Surgery, ed. 1872, vol. i. 778.

Case I.—Jas. Corcoran, æt. 36, labourer, was admitted to Ward 11, Bellevue Hospital, May 31, 1881, for an aneurism of the right brachial artery which he had discovered only four weeks before. He states that his father died by accident at the age of eighty, and that his mother is still living in good health at eighty-two. He has a sister suffering from a malignant growth of the face, probably cancerous. When a child the patient had an articular osteitis of the right knee, which resulted in an anchylosis of the joint at almost a right angle, and which has necessitated the use of a crutch upon that side up to the present time. No distinct history of syphilis; admits the use of tobacco to excess; drinks "moderately."

About four weeks ago, after he had been at work shaking some carpets, he felt severe pains in his right wrist, and noticed it was a little swollen. The pains continued; and, under the impression that they were rheumatic, he applied to a druggist, who, strange to say, advised him to consult a physician, which he did. The doctor discovered a pulsating tumour, which he told the patient was a brachial aneurism, and attempted to treat by compression by means of a tourniquet. The pain from this became in a short time so intolerable that the patient was obliged to have it removed. He has had no other attempt at treatment, and the pains have continued with increasing severity up to the present time. The tumour has also grown steadily in size, but quite rapidly during the past week.

On examination there is found, about two and one-half inches below the border of the pectoralis major on the right side, a tumour the size of a hen's egg, pulsating strongly. Its pulsation is forcible, expansile, but is easily controlled by pressure upon the axillary or the subclavian artery. There is a distinct thrill and a loud *bruit* which can be heard in the brachial below, and also in the radial at the wrist. The radial pulse seems to be slightly delayed upon this side. The whole extremity is swollen so that it measures from half an inch to an inch larger than the left, and it is the seat of some venous congestion. The patient now complains more of numbness and tingling in the hand than of pain, but there is very little if any anæsthesia. A careful examination of the heart was made without detecting any organic disease. Dr. Frank H. Hamilton, who was on duty at the time, very kindly turned the case over to me for treatment, advising that I use compression without an anæsthetic. Digital pressure was first thought of, but was given up and the following contrivance resorted to: A piece of splint board was cut about a foot and a half long, and three inches wide at one end tapering to a half inch at the other. This latter was padded so that it made a hard ball about three-fourths of an inch in diameter. The patient was placed at the edge of the bed, and his arm, stretched out at a right angle with the body, rested upon a table. Seating myself in front of the patient, I rested the broad end of the splint-board against the front of my shoulder, and placed the padded end upon the artery in the axilla. With one hand this was steadied and kept in position. The other hand was kept upon the tumour to make sure that its pulsation was completely controlled. We were thus enabled to make very constant and even pressure with comparative ease.

June 1 at 10.40 A. M. After having used digital pressure at intervals for about half an hour previous, the above was applied with the purpose of controlling entirely the pulsation of the tumour.

11.15 A. M. Patient complains of numbness and anæsthesia in the hand and arm, and of considerable pain.

11.45 A. M. Pain has increased so that Magendie ♏ viij are administered hypodermically.

12.50 P. M. It is found that by a little care the pad can be so placed as not to include any of the nerve trunks between it and the bone, and that when this is done he complains of no pain. A very slight deviation from this position is immediately announced by darting pains down the arm, which is a signal for a readjustment of the pad. As a little soreness begins to be felt, the pad is removed entirely and digital pressure used for twenty minutes.

1.50 P. M. There has been no pain of any consequence for the past two hours. The patient is in fact so comfortable that he has been dozing for ten minutes. The hand is warm but the arm and forearm are quite cold, and there is some venous congestion.

3.45 P. M. A radial pulse is detected, even when there is no pulsation in the aneurism. On making pressure higher up in the axilla above the usual point, this is completely arrested. For the last half hour there has been considerable pain in spite of all effort not to press upon the nerve trunks, and Magendie ♏ vj is given.

6 P. M. During the day, the assistants, who were the *internes* of the Hospital, relieved each other at intervals of from half an hour to an hour. During the change of hands, occasionally the aneurism would pulsate three or four times before the pad could be adjusted. Sometimes, also, it would slip a little in avoiding nerves, so that there has not been more than fifteen or twenty minutes at a time when there was no pulsation whatever of the tumour. Since 5 P. M., it has been noticed that much less pressure was required to control the pulsation, and also that none took place during a change of hands. The whole limb is now warm and of nearly normal colour.

9 P. M. No pulsation in the sac has occurred since five o'clock. The radial pulse has steadily improved. There has been no numbness since early in the afternoon. The only pain the patient has experienced for the last few hours has been in his back, from his constrained position. No bruit can be detected. Pulsation of the artery immediately above the tumour is very feeble, and even high in the axilla is much less forcible than normal. The tumour is hard and firm. A hard pad was now placed in the axilla and the arm bandaged to the side. The patient was given a light supper and Magendie ♏ viij, and in a short time he fell asleep.

4th. There has been no further pain, and no return of pulsation; the patient has been kept quiet in bed. The axillary pad is now removed; the tumour is found much smaller and very firm.

20th. There has been no sign of relapse. A careful examination establishes this fact, which before has been doubtful, viz., pulsation in the brachial below the aneurism and throughout its course. This is very feeble. The principal means by which the circulation of the arm is carried is by a vessel which approaches in size the brachial, situated on the outer side of the belly of the biceps. This can be followed down to the elbow, where it is lost. The case has been examined by Drs. Hamilton and McBurney, and several other gentlemen, all of whom agree that the cure is a radical one. The patient is discharged from the Hospital at this date in good general condition, with instructions to use his crutch with the left arm.

Aug. 1. He returned for observation, having had no symptom of relapse since his discharge. The tumour can only be found by careful search.

Jan. 9, 1882. I examined the patient to-day, and was unable to satisfy myself that I could find the tumour at all. The circulation is still carried on chiefly through the large collateral branch above mentioned, the pulsation in the brachial throughout being quite feeble. The radial pulse is about as strong as that upon the opposite side. He complains of the hand often becoming cold. In spite of injunctions, he was found to be using the crutch with the right arm again. He has no pain or other inconvenience than the coldness mentioned.

Case II. *Aneurism of Left Brachial at its Middle; Ligature of the Brachial at Upper Third; Secondary Hemorrhage; Ligature of the Axillary; Cure.* (Reported by L. D. Waterman, of Indianapolis. *Western Jour. of Medicine*, 1867, p. 584.)—A butcher, aged thirty-two years, seen in May, 1857, with a tumour, size of small hen's egg, at middle of the left brachial artery. It was steadily increasing. The patient had valvular disease and great cardiac hypertrophy. The brachial was tied in its upper third. The aneurism shrunk to a small hard lump without pulsation. The ligature did not come away, and on the sixteenth day, with the thread still hanging, the patient butchered a calf. A few days afterwards he called attention to a rapidly forming tumour just above the ligature. Ligation of the axillary was advised, but refused. Two weeks later the surgeon was called for hemorrhage, the false aneurism having burst. The axillary was then tied in its lower third: the ligature came away properly, and the artery between the ligatures as well as the aneurism was completely obliterated. The patient died six months later of dropsy.

Case III. *Aneurism of Right Brachial at its Upper Third; Ligature of the Axillary in its Lower Third; Secondary Hemorrhage; Ligatures of the Axillary in its Upper Third; Cure.* (Reported by C. B. Kibler, Corry, Pa. *Buffalo Med. and Surg. Journal*, 1870–71, p. 225.)—Male, aged twenty-nine years. The physician was called August 17, 1870, on account of intense pain in the right arm, forearm, and hand. In the upper third of the brachial artery was a pulsating tumour the size of an orange, which had been noticed six weeks before. It was attributed to swinging on a horizontal bar. August 25, the axillary artery was tied in its lower third. On the eighth day, secondary hemorrhage took place; it was temporarily controlled by pressure upon the subclavian, and finally by ligature of the axillary in its upper third. This ligature came away in five weeks, and the wound was healed. When last seen, a few months after the operation, he had but limited use of the hand and forearm, and no radial pulsation.

Case IV. *Aneurism at the junction of the Upper with the Middle Third of the Brachial; Instrumental Compression; Cure.* (Reported by M. Denuce. *Gazette des Hôpitaux*, 1860, p. 170.)—A vinedresser, aged fifty-two years; no history of contusion or injury of any kind; tumour first noticed three and one-half years before, and had grown steadily since that time. He had suffered meanwhile from neuralgic pains, numbness, and stiffness of the fingers. He was first seen July 20; the tumour was then of the size of a large walnut. It had expansile pulsation, thrill, bruit, and, in fact, all the marked signs of aneurism. On July 21, compression of the axillary was begun by means of Broca's instrument for compressing the femoral. In fifteen minutes the pulsation ceased, but the patient was suffering greatly. After an hour and a quarter, he declared he would bear it no longer, and loosened the apparatus. He would not allow it to be reapplied for any consideration. Two hours later examination showed that the pulsation had diminished very much in intensity; the pulse was feeble, and the whole arm red, and a little œdematous. The next morning the pulsation was found to have ceased entirely; it returned again in the evening, but was feeble; patient would not allow anything to be applied. On July 23, and daily thereafter, until August 8, the tourniquet of Petit was applied, or at least the attempt was made to apply it. Once he allowed it to remain fifteen minutes, but usually loosened it immediately, on account of pain. At no time during this period was suspension of the pulsation obtained. He left the hospital at this time. He was seen August 24, and reported that there had been no pulsation for eight days, his pain and numbness were all gone, and he considered himself cured. Pulsation was then absent, as was also the bruit, pulsation of the artery below the tumour felt with difficulty, feeble radial pulse. On October 2, there had been no relapse; the radial pulse was a little stronger, but still weak. Still feeble pulsation in the brachial below the tumour, *i. e.*, the tumour had been obliterated, but the artery not completely. The entire compression was estimated at two and one-half hours.

CASE V. *Aneurisms of the Brachial, Radial, and Vascular Tumour of the Thumb, all in the Left Arm; Unsuccessful Compression.* (Reported by W. D. Spanton. *London Med. Times and Gazette*, 1865, p. 517.)—Female, aged twenty-three years, came under observation in Sheffield General Infirmary, November 5, 1863, for a swelling of the left thumb. She had bronchocele, but reports she had always been in good health. Examination revealed a swelling of the thumb which looked as though it were going to suppurate; also between the heads of the first and second metacarpal bones, an aneurism of the radial the size of a small marble, which had been noticed by a sister three years before. It had never caused pain, and had grown very slowly. On the following day an aneurism of the brachial was discovered three inches above the bend of the elbow, of the existence of which the patient was ignorant. It was the size of a pigeon's egg, pulsated strongly, and had a loud bruit. A systolic murmur was heard at the base of the heart. She was kept quiet, and a tourniquet applied on the upper third of the brachial for a few hours at a time. A little consolidation of the sac seemed at first to take place, but the surgeons having decided against the use of the ligature, she left the infirmary in about the same condition as on admission.

CASE VI. *Aneurism at Upper Third of the Left Brachial; Treatment Palliative; Death from Rupture.* (Reported by Scarpa. *Sur l'Anevrysme*, Paris, 1809.)—T. C., a soldier, perceived, at the beginning of the year 1759, a tumour situated just below the left axilla, for which he knew no cause; no history of traumatism of any sort. Fordyce, who saw the patient, recognized an aneurism, but did not dare to undertake its cure. It steadily increased in size until the patient was brought to St. George's Hospital. The tumour then extended along the course of the brachial artery, and presented marked pulsations. The physicians and surgeons of the hospital were of the opinion that no operation should be undertaken, because the tumour was situated so high up. They contented themselves with palliative measures, *i. e.*, cataplasms and anodynes. At the beginning of December, the aneurism ruptured and the patient died of hemorrhage. On the autopsy, the artery was found corroded and ruptured in the neighbourhood of the axilla. At first sight it appeared that the sac was formed of the arterial coats; but it was not so. The cavity of the artery was only a little dilated where it opened into the aneurismal sac and half a finger's breadth above it was closed.

CASE VII. *Aneurism of the Brachial at the bend of the Elbow; Failure of Compression; Ligature at Middle Third; Cure.* (Reported by Jules Bœckel.

Gazette Hebdom. de Méd. et de Chirurg., 1877, p. 344.)—Mechanic, aged 25 years, entered the hospital at Strasburg November 19, 1876, for a tumour of the right elbow of five weeks' standing. It is reported to have been of "spontaneous" origin but came quite suddenly and with marked pains down the forearm and hand. These obliged him to stop work. A physician treated him two weeks before; a small pulsating tumour in the fold of the elbow was discovered to be the cause. It increased in size until it became as large as a small apple [*pomme d'api*]. Compression by a tourniquet was applied, but the patient became so unmanageable and the pains produced by it so severe it was discontinued. On admission to the hospital, characteristic pulsation, thrill, and bruit were obtained, and the radial pulse was feebler on this side. Compression was not again attempted, but the artery was tied with catgut at the junction of the middle and the lower thirds followed by cessation of the radial pulse. On the third day the radial pulse became again perceptible, and on the following day the stitches having been removed, the patient left the hospital. December 7, tumour was one-half the original size and there had been no return of the pulsation. In January it was observed that both the ulnar and radial recurrent arteries were notably dilated, and could be felt pulsating. The patient was last seen on March 5, he had then been working a month without any relapse. Nothing had been seen of the ligature.

CASE VIII. *Aneurism of the Brachial at the Bend of the Elbow; Partial compression for four months; Cure.* (Reported by Mr. Birkett. *Guy's Hosp. Reports*, 1862, p. 311.)—A young surgeon, aged 29 years, noticed January 23, 1862, an aneurism at the bend of the left elbow the size of a hazel-nut. It had caused no symptoms, and was only discovered by accident. No blow or injury of any kind was known, and he had never been bled. He had had repeated attacks of rheumatism during the past five years. When first observed by Birkett, Jan. 24, it presented all the diagnostic signs of aneurism. Compression by an elastic armlet extending six inches above and below the tumour was advised, and a pad placed under the upper part so as to make moderate pressure upon the artery. During three weeks before this could be made, the aneurism had doubled in size. After two weeks' trial it was discontinued on account of the swelling of the hand and the great pain produced. Flexion was then used for a few nights, but also caused great pain and swelling. After this until May 7, irregular compression was made chiefly by a pad and bandage sometimes combining flexion. The tumour was then about the size of a walnut, and its walls felt much thicker. The propriety of ligating the artery was now discussed but decided against, and under the advice of Sir Benjamin Brodie, the continuance of the compression was determined upon. A steel tourniquet with two pads was now tried and worn by the patient under his coat, the arm being carried in a sling most of the time. This was worn until July 11, when all pulsation ceased, it having been very feeble for some days before. After four or five days all pressure was left off. On examination September 12, it was found to have diminished in size to a hazel nut. There was no pulsation. Considerable wasting in the muscles of the arm took place.

CASE IX. Reported by Dr. D. Hayes Agnew (*Agnew's Surgery*, i. 605, ed. 1878), who says: "In only a single instance have I witnessed a spontaneous aneurism of the brachial artery. The patient was about 60, and the tumour was situated two inches above the bend of the arm. The artery was tied two inches above the tumour with entire success."

CASE X. *Aneurism of the Brachial at Middle Third; Unsuccessful Compression; Ligature of the Axillary; Subsequent Opening of the Sac and finally Excision of the greater part of it; Cure.* (Reported by Kade. *St. Petersburgh Med. Zeitschrift*, 1866, p. 202.)—Boatman, aged 46. Came under observation January 4, 1865, with a tumour commencing three fingers' breadth below the right axilla, and extending to within the same distance of the fold of the elbow. It was of irregular size, and occupied the internal and anterior surfaces of the arm. It measured 19 cm. in length, 17 in width, and the circumference of the arm was 33 cm. against 23 of the opposite side. In one place it was hard, at another elastic and soft, and at another there was fluctuation. It was covered by healthy, but in places, very thin skin. Expansile pulsation, bruit and thrill all marked; pulse in radial and ulnar arteries scarcely perceptible.

He stated that when he was about 20 or 25 years of age, a heavy board fell on his right arm, and that ever since there had been a small nodular swelling at the middle of his arm. It did not pulsate, and remained unchanged until six months ago, when it began to increase in size and grew steadily until it attained its present dimensions.

Intermittent compression was tried for six days, being employed for two or three hours four or five times a day. It seemed to diminish in size, and the bruit was sensibly weaker, but at the end of another week it was larger than ever; the skin was hot and very thin, and ligation of the axillary was decided upon. This was done January 19, and an ice-bag placed upon the arm after the operation. January 25, an exploratory incision was made in the sac for pus, and about a teaspoonful of blood evacuated. February 4, the sac was opened by a free incision, and the clots turned out; there was now some pus. The greater part of the sac was removed a few days later; the wound filled in by granulations; and by the middle of March was entirely healed. The patient was discharged April 8, complaining only of a little weakness in his arm and hand; the arm then measured only 2 cm. more than the opposite one.

Kade's interpretation of the history in this case is ingenious and quite plausible. He concludes that the immediate consequence of the injury was an extravasation of blood either between the arterial coats or into the sheath of the vessel; that this was gradually changed to a firm fibrous tumour adhering closely to the artery; that the continued pressure and irritation of this upon the vessel together with the disturbances from the original injury done to the artery were the starting point of an *endarteritis deformans chronica;* and that as a result of the atheromatous changes which followed this, the aneurism had developed within the last six months.

CASE XI. *Aneurism at Bend of Elbow; Unsuccessful Compression; Cure by Ligation.* (Reported by Sidney Jones. *Brit. Med. Journ.*, 1872, p. 210.) —A woman, aged 30 years, four months before she was admitted to St. Thomas's Hospital, "violently sprained her left elbow." There was much pain at the time, and only two months later was noticed a pulsating swelling. On admission it was the size of a walnut, and situated at the bifurcation of the brachial. Pressure and flexion were tried for two weeks without success. The brachial was then ligated two inches above the tumour. The ligature came away on the twenty-first day; there was now no pulsation at the wrist or elbow. She left the hospital three weeks later, quite well.

CASE XII. (Reported by Liston. *Liston's Surgery*, p. 181.)—"An old ship carpenter, while at work as usual, felt something snap in his arm, and a pulsating tumour was soon after noticed, and before I was asked to see him by Mr Cheyne, of Lieth, it had attained during four months the size of a hen's egg, and was evidently made up in part of solid matter. The brachial was tied and everything went on favourably."

CASE XIII. *Aneurism at the Bend of the Elbow; Digital Compression for ten hours; Cure.* (Reported by Viennois. *Gazette Médicale de Lyon*, 1866, p. 492.)—Male, 17, entered l'Hôtel Dieu, July 26, 1866, for a pulsating tumour of one year's standing. He had been devoting himself to exercising with a hammer for two months when he felt a tumour at the bend of the elbow. When he entered the hospital it was the size of a pigeon's egg, situated apparently at the bifurcation of the brachial. He had had from time to time numbness in the fingers, and the arm was weaker than the other. The tumour was sacciform, and situated in front of the artery. It presented forcible pulsation, thrill, and loud bruit. On extending the arm completely all these signs disappeared. Digital compression was begun over the middle of the brachial at eleven o'clock in the morning. After three hours the tumour became hard, and neither pulsation nor bruit could be detected. In order to insure a cure the pressure was maintained seven hours longer, until nine o'clock in the evening. Patient left the hospital August 8, completely cured. He was heard from September 13: there had been no sign of relapse, the tumour was about one-fourth its original size, and the arm had regained its function.

Case XIV. *Aneurism at bend of Elbow; Failure of Compression; Ligature applied above and below the Sac; Cure.* (Reported by Flajani, *Collezzione d'os Serv, et riflles di Chirurg.*, t. ii. 22.)—A plethoric young man, after making the muscles of his right arm tense in lifting a weight, could not use it at all for several days because of the pain. A lividity of the skin came on the next day; pain and discoloration disappeared in a short time, and he resumed his work. Used his arm freely for six months when he began to feel pain, which, at last, obliged him to stop work on account of its severity. Although he had seen, for some months, a small tumour at the fold of the elbow, he did not think of this as the cause. When he came under observation the tumour was the size of a large walnut, situated about three fingers' breadth above the internal condyle. The usual signs of aneurism were present. After bleeding the patient, as a preparatory measure, compression was begun by means of a bandage extending from the axilla to the condyles of the humerus. It produced considerable engorgement of the arm, though only moderately tight, and not arresting the radial pulse. This was removed on the fourth day, having been applied in all thirty-two hours, and the only change produced in the tumour was a little flattening; the hand and forearm were greatly congested and œdematous. Believing the aneurism would not warrant any further continuance of this treatment, the ligature was applied the next day above and below the sac. On the fifth day afterwards the radial pulse was detected, and suppuration established in the sac. The ligatures came away on the eleventh and twelfth days, and on the forty-first day he left the hospital cured.

Abstracts of the three following cases by Paletta, Pellatan, and Richet, are introduced here, because they have been so often referred to, especially the first two, by other writers upon this subject, as instances of true brachial aneurism. It does not seem to me that they ought to be included under this head.

Paletta's case (*Giornale di Venezia*, Marzo, 1796) was in a nun, a scorbutic subject, who heard one day, in her left arm, "a noise as if she had broken a nerve." Immediately afterward a pulsating tumour appeared a little above the internal condyle. An attempt was made to treat it by compression, but had to be abandoned on account of a fracture of the forearm of the same side, which was received soon after. The aneurism extended to the lower extremity of the arm, and the increased pulsation of this, together with frequent attacks of hemorrhage, are said to have hastened the death of the patient, which appears from the history to have been two or three months from the appearance of the aneurism. No autopsy was made, but the author had no doubt that it was produced by corrosion and rupture of the brachial artery.

Pellatan's case (*Clinique Chirurg.*, t. ii. 4) occurred in a man of fifty-four, who was first seen June 21, 1779. He was in wretched general condition, and had had for about three months a very bad cough, during which he rested mostly with his head upon his right hand. About three weeks before admission to the hospital he had noticed a swelling in the fold of the arm, which had increased in size with all the signs of inflammation, finally rupturing and discharging a large amount of pus. It appeared like an ordinary phlegmon, the skin over it had a gangrenous look; the sinus was still present, but, on careful examination, strong pulsation was detected at the bottom of it. "Everything indicated an effusion of arterial blood," says the author, who then proceeded at once to apply a ligature above and below the tumour. Secondary hemorrhage came on the tenth day, and the patient lost so much blood that he died on the fourteenth. On autopsy the brachial was found ossified at its lower extremity to its bifurcation; along this track a large rent was found, which he thought had been produced by extension of the prolonged flexion.

Richet's (*Bulletin de la Société Anatomique*, 1873, p. 697) case is a more recent one. The patient was a man of sixty-five, who, when seen, had a large tumour extending from a little above the left elbow to the middle of the forearm, and was of eight days' standing. It came suddenly after a blow received upon some barrel-staves which he was carrying in this arm, and with an acute pain. There was then neither expansion nor bruit. But a week later the tumour had become circumscribed and the size of an orange, and gave all the signs of aneurism. Flexion and compression by sand-bags failing to produce any change in the tumour; digital compression was practised for ten consecutive hours. This arrested permanently the pulsation of the tumour. The bruit could be heard for a week and then disappeared completely. The radial and ulnar pulse continued imperceptible. The patient died comatose one month after the compression. Arteries of the brain were found atheromatous, and extensive cerebral softening, but no hemorrhage or embolus discovered. The aneurismal sac was very thin, and in the anterior part of this a portion much thicker was found, which was interpreted to be another smaller aneurism, by the rupture of which the secondary traumatic aneurism had been produced. This was supposed to have existed a much longer time, but unobserved by the patient. A rupture of the artery was found to correspond to the opening into the sac.

The accompanying Table is a summary of the main points in the preceding cases :—

No.	Authority.	Age.	Sex	Side.	Site.	Supposed cause.	Treatment.	Result.
1	Holt	36	M.	Right	Upper third	Shaking carpets	Instrumental compression for ten hours.	Cure
2	Waterman	32	"	Left	Middle third	None stated	Ligation of brachial; ligation of axillary for secondary hemorrhage.	"
3	Kibler	29	"	Right	Upper third	Swinging on horizontal bar	Ligation of axillary, lower part; ligation of upper part for hemorrhage.	"
4	Denuce	52	"	..	Junction of upper mid. third	None known	Intermittent instrumental compression.	"
5	Spanton	23	F.	Left	Lower third	"	Compression by tourniquet.	Left hospital unimproved.
6	Scarpa	..	M.	"	Upper third	"	Palliative	Death
7	Boeckel	25	"	Right	Bend of elbow.	Spontaneous	Failure of compression by a tourniquet; ligation of brachial.	Cure
8	Birkett,	29	"	Left	" "	None known	Intermittent compression and flexion.	"
9	Agnew	60	..	..	Lower third	"	Ligation of brachial.	"
10	Kade	46	M.	Right	Middle third	Blow 25 y'rs before	Failure of compression; ligation of axillary.	"
11	Jones	30	F.	Left	Bend of elbow.	Sprain	Failure of compression and flexion; ligation of brachial.	"
12	Liston	"an old man"	M.	..	" "	Strain	Ligation of brachial.	"
13	Viennois	17	"	..	" "	Exercise with hammer	Digital compression ten hours	"
14	Flajani	"a young man"	"	..	" "	Strain	Failure of compression; ligation above and below the sac.	"

From the foregoing cases the following conclusions may be drawn regarding :—

1. *Age.*—By the best authorities on the subject of aneurism between thirty and forty years is given as the time of life in which the disease is the

most frequent. Seven of the above cases, eight, if we include Case XIV., which is said to have been in a "young man," occurred under thirty-two years.

2. *Sex.*—The predominance of the male sex is borne out by our statistics, as well as by those of all observers on the subject. Only two of the cases (V. and XI.) occurred in females. In one the sex is not mentioned.

3. *Site of the Disease.*—The aneurism affected the left side five times, the right four times, and in five the side is not mentioned. In six of the cases, nearly one half of the whole number, the tumour was at the bend of the elbow, presumptively at the bifurcation of the artery. In two cases (V. and IX.) it was situated at the lower third. Of the remaining six cases, two (II. and X.) were at the middle third; one (IV.) at the junction of the middle and upper thirds, and three at the upper third (I., III., and VI.).

4. *Exciting Cause.*—In five of the cases it is distinctly stated that no assignable cause was known. In one (VII.) it is stated to have been "spontaneous." In Waterman's case (II.) no reference whatever is made to etiology. It may be thought that it is not quite fair to accept this negative evidence as proof that the aneurism was not from an injury. But the additional evidence afforded by the fact mentioned of coexisting valvular disease of the heart, together with the occurrence of secondary hemorrhage following a ligature placed close above the sac, and the death of the patient six months later from dropsy, make it more than probable that the aneurism depended upon disease of the arterial coats.

In Kibler's case (III.) the history states that it was attributed to exercise upon a horizontal bar. Arterial disease seems pretty clearly demonstrated in this case also, by the occurrence of secondary hemorrhage on the eighth day after ligation of the artery just above the sac.

In Case X., that of Kade, the aneurism is believed to have been due to an injury by a falling board received twenty-five years before symptoms developed. His argument, though very interesting, does not appear to me to furnish sufficient grounds for excluding this case from the category of true aneurisms.

In Cases X., XII., XIII., and XIV., the tumour could be pretty distinctly traced to a strong muscular effort or a blow as an exciting cause. In two instances it is stated in the history that the tumour was first noticed some months after the occurrence of the injury. In the other two cases there is no evidence in the histories that a rupture of the artery had been produced. In my own case, the patient, on being questioned, could remember no other possible exciting cause than the carpet-shaking, but it was some little time after this before the tumour was discovered. Whether the use of the crutch under that arm for thirty years had anything to do with the production of the aneurism, is an interesting question, and one upon which there was quite a diversity of opinion among those who saw the case. I am myself not quite prepared to admit it as the cause of the arterial degeneration. My reasons for this are twofold: In the first place, the pressure of the crutch came two or three inches above the point at which the tumour developed; secondly, notwithstanding the frequency with which crutches are used at all ages, and in all conditions, and that we see almost daily the effects of pressure upon the nerves in the shape of "crutch paralysis," this, I believe, is the only instance on record, if indeed this be one, in which the use of a crutch has been followed by aneurism.

5. *Treatment.*—Palliative treatment only, was used in one case (Scarpa's), it being decided that it was unfit for operation, and the patient was left to die.

In eight cases the ligature was used, with ultimate success in every instance. In four of these the vessel was tied pretty close to the sac, *i. e.*, within two or three inches. Secondary hemorrhage followed in two instances, II. and III. The Hunterian operation was done twice, in Cases VII. and X., in one of which it was followed by suppuration in the sac, and the excision of the greater portion of it. In Liston's case it is not stated at what point the ligature was applied. In Flajani's case (XIV.) the old operation of cutting down upon the sac and placing a ligature on the vessel above and below was performed.

Compression was tried in nine cases; it was successful in four, and failed in five. Of the unsuccessful cases, four (VII., X., XI., and XIV.) were afterwards cured by the ligature, and one (V.) left the hospital unimproved, the ligature being decided against. In Case VII., the compression was made by a tourniquet, but it had to be removed on account of the intense pain produced. In Case X., intermittent compression, which appears to have been digital, was tried for six days, being kept up for two or three consecutive hours four or five times a day. No lasting improvement seemed to follow, and it was then given up. In Case XI., it is simply stated that compression and flexion were unsuccessfully tried for two weeks. In Case XIV., compression was made by means of a bandage extending from the axilla down to the tumour at the bend of the elbow. So much œdema and congestion were produced that it was removed in thirty-two hours, and no change having taken place in the tumour, the bandage was thrown aside. In Case V. the tourniquet was used for a while and then given up, as no special improvement had taken place.

Of the successful cases of compression, digital alone was used in one case (XIII.). It was kept up ten hours, but consolidation of the tumour took place in three hours, as neither bruit nor pulsation could be detected after that time. In three cases some form of instrumental compression was used. In Case VIII. it was made first by an elastic armlet and a pad, but this had to be discontinued on account of intense pain and swelling. A steel tourniquet making partial compression was then worn for two months before pulsation ceased. In Case IV. instrumental compression was kept up for an hour and a quarter, when the pain became intolerable, the instrument had to be removed, and the patient would not allow it to be reapplied. For a week afterward a tourniquet was endured for a few minutes each day, and then the patient left the hospital disgusted. Pulsation ceased spontaneously eight days later.

My own patient (Case I.) had had a tourniquet tried before I saw him, but was unable to stand the pain. By means of the conical pad he was kept free from pain the greater part of the ten hours during which compression was kept up. Only twice was morphia required: once early in the day before we had discovered that it was possible to avoid entirely the nerve trunks. Prompt and complete relief was afforded in both instances. The thickening of the integument in the axilla, consequent upon the long use of the crutch, was undoubtedly of a good deal of advantage in enabling the patient to tolerate the pressure for so long a time. Six hours were required for the consolidation of the tumour; in Case XIII. it was accomplished in three hours. The existence of a good radial pulse at end of five hours, through the collateral circulation, seems to be worthy of more than a passing notice. The condition of the radial pulse is only referred to in three cases. In Case IV. the patient was not seen until eight days after pulsation of the tumour had ceased, and then the radial pulse is said to have been feeble. In Case VI. the radial pulse was not noted until the third day after the application of the ligature; and in Case XIII. not until the fifth day.

May this not be explained in my case, by the supposition that the pressure of the crutch upon the artery had already produced a considerable dilatation of the collateral branches?

The cure of the aneurism without the obliteration of the artery was noted in Denuce's case (IV.), as well as in mine.

From the foregoing it will be noticed that those aneurisms, situated at the bend of the elbow or just above it, have been quite easily managed by pressure when persisted in, or by the ligature. The real difficulties in the treatment of these cases meet us in those in which the aneurism is situated in the middle or upper third of the artery. Broca (*op. cit.*, p. 884) says that aneurisms of the upper third of the brachial still call for the ligature of the axillary, and that pressure is not applicable on account of the proximity of the large nerve trunks. Below the insertion of the coraco-brachialis the indications change; here he advises alternating compression by means of two pads, as even here continuous compression at one point is out of the question.

Ashhurst (*Principles and Practice of Surgery*, p. 558) condemns *in toto* the ligature of the axillary for aneurism of the upper third of the arm. He says these "may be treated by direct compression or by flexion, and if these fail by the old operation or amputation, either of which is preferable to ligature of the axillary."

Of the six cases above narrated, situated above the middle of the arm, the use of the ligature was followed in two (II. and III.) by secondary hemorrhage; in one (Case X.), by suppuration and excision of the sac. Scarpa's case was left to die, being decided unfit for operation. Denucé's case left the hospital because of the great pain to which he was subjected by compression, and nature completed the cure. With this showing, the simple contrivance of the conical pad, which we will not dignify by the name of an apparatus, but which fulfilled so well the indications in the case in which it was used, seems to deserve a further trial in similar cases.

NEW YORK, No. 200 West Fifty-second Street.

ARTICLE VIII.

ON THE PHYSICS OF ANÆSTHETICS. By WM. H. GREENE, M.D., of Philadelphia.

MANY of the substances which have, from time to time, been proposed as anæsthetics, have been selected with a recklessness and want of judgment which would be surprising were it not for the fact that anæsthetics, like other drugs, have been used empirically. A sudden death, caused by a new anæsthetic, is followed by a universal condemnation of the agent and prolific theories as to the cause of the accident.

My attention has been called to an article by Dr. Edward Reichert, in the *American Journal of the Medical Sciences* for July, 1881, in which certain simple ethers which have been passing favourites, are condemned, and the accidents to which they have given rise are attributed to arterial depression caused by the chlorine, bromine, or iodine which they contain.

Without in any manner discussing the physiological action of chlorine, bromine, and iodine, it may be interesting to inquire whether disastrous results may not be occasioned by the physical nature of an anæsthetic to the exclusion of all other factors.

All gases or vapours which are capable of replacing a portion of the air entering the lungs, and which exert no poisonous action on the tissues, may be classed as anæsthetics. It is well known that the inert gases, hydrogen, nitrogen, nitrous oxide, etc., are capable of producing complete insensibility, generally ascribed, and very probably for the most part due, to the exclusion of oxygen. It is not at all improbable that at least a part of the effect of all anæsthetics is due to the same cause. Air charged with vapours of ether or chloroform contains a proportion of oxygen which diminishes as that of the vapour increases, and, while the anæsthetic undoubtedly enters the blood and may have a direct action either on that fluid or on the nerve centres, the diminution in the supply of oxygen cannot be without influence. It is manifest that gases or vapours which exercise a destructive effect on the tissues, could not enter the list of anæsthetics, from which carbon monoxide, carbon disulphide, hydrocyanic acid, etc., would consequently be excluded. We must remember that while the gas or vapour used as an anæsthetic excludes a portion of oxygen from the lungs, it may also impede the removal of carbon dioxide, so producing a double effect. It is well understood that the excreted carbon dioxide is eliminated by the ordinary process of diffusion, obeying the laws of the diffusion of gases. Any other gas or vapour is eliminated from the system in the same manner.

The volatility of a liquid is necessarily an important question in selecting an anæsthetic, and it is doubtful whether there be a liquid volatile at about the temperature of the body, and whose vapour is not poisonous, which has not been tried as an anæsthetic. The volatility of a liquid of course depends in great measure upon its boiling point, and the closer the approximation of that boiling point to the temperature of the air, the more rapidly will the liquid assume the gaseous state. But the tension of the vapour of a liquid at ordinary temperatures, also has an influence on its spontaneous evaporation, so that liquids, of comparatively high boiling points, such as ethylene chloride (85°), have been used as anæsthetics.

But while the ready volatility of a liquid insures the ability to introduce a sufficient quantity of its vapour into the lungs, that volatility does not indicate the facility with which the system may be relieved of an agent whose further presence is neither necessary nor desirable. The elimination of an anæsthetic is a matter of as vital importance as is its introduction, and this elimination, for the most part effected by the lungs, must be governed by the laws of the diffusion of gases. If the vapour diffuse but slowly into the air, it is obstinately retained by the air lobules, and its presence must, to a certain extent, interfere with the elimination of carbon dioxide, and the necessary absorption of oxygen.

The rate of diffusion of gases is inversely as the square roots of their densities. It is interesting to compare the vapour densities of a few simple compounds and at the same time their reputed values as safe anæsthetics.

	Boiling point.	Vapour densities.
Nitrous oxide	—	1.527
Ether	35.6°	2.565
Methylene chloride	41.0	2.945
Ethylidene chloride	60.0	3.430
Ethylene chloride	85.0	3.430
Ethyl bromide	40.7	3.754
Chloroform	61.0	4.199
Methyl chloride	—	1.736
Ethyl chloride	11.0	2.219

In such a comparison, the attention must necessarily be drawn to the low densities of the substances which are universally recognized as those whose employment is most devoid of danger.

Of the true physiological action of anæsthetics we are in complete ignorance, and the various theories of "coagulation of protoplasm," and "disturbance of equilibrium of motion of protoplasmic molecules," are unworthy of serious consideration. We know only that they exert a momentary action upon the nerve centres, and it has been long since shown that they are eliminated from the system unchanged.[1] That their action is peculiarly exerted upon the nerve centres may be understood from the fact that nervous tissue is capable of absorbing a greater proportion of the volatile anæsthetics than any other animal tissue. Yet the anæsthetic, chloroform particularly, undergoes no chemical change during its sojourn in the organism.

All of the effects of anæsthetics may be accounted for if they simply cut off from the nerve centres the necessary supply of oxygen, and these effects should vary with the nature of the agent which temporarily replaces the oxygen. It is unquestionable that whatever the physiological action of a drug may be, that action will be intensified by the long retention of the agent in the system, as is the case with those anæsthetics having high vapour densities.

Its vapour density would indicate chloroform to be the least safe of the common anæsthetics, that which would be most obstinately retained in the system because the lungs are unable to eliminate it. Ethyl bromide should be scarcely less dangerous; indeed I pointed out this element of danger to one of those prominent in introducing ethyl bromide, but the suggestion, based only on theoretical reasoning, received but little attention.

The fatal cases of poisoning by methylene chloride cannot be cited as due to any particular poisonous action, for I have no hesitation in stating that the cases in which methylene chloride has been used as an anæsthetic, have been extremely rare. Under the name of this compound, mixtures of diverse composition have been sold, and it is not to be expected that the surgeon should verify the identity of the substances recommended to him. The preparation of methylene chloride is quite difficult, and the consequent expense is so great as to remove the compound from the list of practicable anæsthetics. A sample of methylene chloride, imported from a reputable London house, when it was in vogue as an anæsthetic some years ago, I found to contain about ninety-five per cent. of chloroform, and there is no reason to believe that any of the methylene chloride which has been so loudly abused, was any purer than this sample. Recommended as a safe anæsthetic, it was used without the precautions necessary in the administration of chloroform, and the usual consequences of the careless use of chloroform were inevitable.

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[1] Lallemand, Perrin et Duroy. Prize Essay, Academie des Sciences, 1860.

Carbon dioxide is a non-poisonous gas, its density is the same as that of nitrous oxide. The introduction, as an anæsthetic, of undiluted carbon dioxide into the lungs, however, interferes with the elimination of the same gas from the blood, and its accumulation is shortly followed by asphyxia. On the contrary, the excretion of carbon dioxide may still progress while the lungs are filled with nitrous oxide, and anæsthesia by the latter agent is accomplished without a symptom indicating danger.

The chlorine, bromine, and iodine ethers of the lower alcoholic radicals, especially those which have been used as anæsthetics, are not "loosely molecular compounds," as supposed by Dr. Squibb. They are exceedingly stable bodies, and are in great part, if not totally, eliminated from the system unchanged. The odour throughout the body of the anæsthetic employed, noted after death in the experiments of Dr. Reichert and others, is of itself evidence that the negative radical is not separated by decomposition in the economy, and it would be difficult to understand why bromine in ethyl bromide should be more toxic than in potassium bromide, a compound of the same nature, unless such effect be attributable to the carbon radical.

As to the ethers higher in the series, those of butyl and amyl, it seems hardly probable that they should be less injurious than the corresponding alcohols, whose poisonous natures have been well established.

While all of these simple ethers may have a depressing influence upon the heart, it may still be open to question whether the depression be due to the chlorine or bromine which they contain, or whether it may not be due to the difficulty with which they are eliminated. They all have high vapour densities, and the greater the proportion of the chlorine or bromine, the higher the density.

That chloroform, whose physical characters would indicate the least security, is repeatedly used without accident, by eminent surgeons, is explained by the manner of administration, and the continually growing death-list shows that its safe administration is an accomplishment not easily acquired.

It may be confidently predicted that methyl chloride and ethyl chloride might be safely used as anæsthetics, but the former is a gas, and would have no advantage over nitrous oxide, while the latter is too volatile to be used in the liquid form, and not sufficiently volatile to be administered as a gas; they would not, therefore, be apt to fill the places of nitrous oxide and ether.

I would not be understood as attributing all of the effects of the agents mentioned to their physical actions, but the foregoing considerations will show that the relations between physical properties and danger are sufficiently well marked to introduce purely physical characters as important factors in all problems on anæsthesia by inhalation.

ARTICLE IX.

ACUTE GLAUCOMA INDUCED BY DUBOISIA.

By ALBERT G. HEYL, M.D., Ophthalmic Surgeon to the Episcopal Hospital, Philadelphia.

THAT atropia instilled into an eye may excite an attack of acute inflammatory glaucoma is generally accepted by ophthalmologists as an established clinical fact. An inference which may properly be deduced from this is that all drugs belonging to the mydriatics may likewise cause this morbid state to appear. A practical illustration of this as regards duboisia is presented in the following history; the first, so far as I am aware, on record:—

I was asked to see Mrs. M., æt. 55, in consultation with Dr. F. P. Henry, Dec. 28, 1881. Forty hours preceding the consultation she had applied to Dr. Henry with reference to the condition of her left eye, the sight of which had been failing for some time. The vision of this eye was $\frac{10}{50}$. Owing to a difficulty of obtaining a clear view of the fundus a drop of a two-grain solution[1] of duboisia sulphate was instilled in the eye; partial mydriasis was induced, and then it was discovered that a glaucomatous cupping of the disk existed. The tension seemed to be about the same in each eye. The patient was sent to her home, but presented herself early the following morning with an acute inflammatory glaucoma which had developed during the night. Eserine was dropped in the eye, morphia administered, and the condition somewhat relieved; owing, however, to the critical state of the eye, I was asked to see it, and found on my visit the following: R. E. Difficulty in obtaining a view of the fundus, but no abnormal cupping of the disk. L. E. Conjunctiva considerably injected; cornea steamy; vitreous cloudy; no view of the fundus; tension considerably increased. *Diagnosis.* Subacute inflammatory glaucoma. An iridectomy was advised to be made as soon as possible, and was successfully performed the same day, in my presence, by Dr. Henry. About two weeks after the operation, as Dr. Henry informs me, the R. E. became hard and vision diminished, but under the use of eserine and morphia these glaucomatous symptoms subsided. The condition of the patient Jan. 27, 1882, may be learned from the following record, furnished me by Dr. Henry, to whom, also, I am indebted for the privilege of publishing this case: R. E., $V.=\frac{20}{100}$; L. E., $V.=\frac{20}{70}$; with a convex glass, $V.=\frac{20}{50}$ in each. A more careful examination with test lenses would doubtless have brought up the vision still more; but this for the present may be properly postponed. All signs of vascularity about the incision in the sclera have disappeared.

The main point of interest is that, following the instillation of duboisia, acute inflammatory glaucoma was speedily developed in an eye in which a simple glaucoma already existed. Several questions of practical importance demand attention:—

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[1] This identical solution was instilled by Dr. Henry into his son's eyes for refraction purposes, only a day or two before using it on the case narrated in the paper, without the slightest ill effect. The lad is myopic. R. E., $M.=\frac{1}{11}$; L. E., $M.=\frac{1}{8}$.

1. The isolated character of the case, the general clinical record of acute glaucoma, the existence of the glaucomatous cup, will doubtless suggest to some minds that there was no causative relation between the duboisia and the acute glaucoma; the case was one of coincidence. According to this view, the eye was in a state favourable to an acute outbreak at any time, and the excitement attending the ophthalmoscopic examination was sufficient cause for its development. This train of reasoning, plausible though it may seem at first, is antagonized by the clinical record of atropia as regards glaucoma. Experience has shown that atropine is badly borne by glaucomatous eyes; that after operations for glaucoma it ought never to be used. This clinical experience strengthens the asserted fact that atropine will induce acute glaucoma, and from it may be properly reasoned that duboisia resembling in action the belladonna alkaloid may likewise excite acute glaucoma, as in the case described. The burden of proof rests with those who deny the causative relation.

2. In view of cases similar to the one referred to in this paper, it is evident that duboisia as well as atropine, and probably other mydriatics, are agents capable of doing damage in the solutions ordinarily employed.

Furthermore, it may be set down as a good rule never to employ any mydriatic in any eye predisposed to what we ordinarily understand as glaucoma. But the practical questions meet us here, can the predisposition or even the prodromes always be diagnosed? Theoretically, in the present imperfect knowledge respecting glaucoma, probably not; our present means of diagnosis in certain stages of glaucoma are altogether too coarse and imperfect. Practically, however, with due care and vigilance it is, I think, possible to avoid in the vast majority of cases putting a mydriatic into an eye on the verge of glaucoma. There are doubtless exceptions to this statement, but they ought not to detract in any degree from the proper employment of mydriatics. I say proper employment, because there seems to me need of a deeper realization of the fact that these remedies are edged tools which, handled carelessly, may do harm. If this be so, it is proper to direct the attention of the profession to a few practical points, which, although not new, acquire fresh power in view of the case narrated in this paper.

1. The use of mydriatics in determining refraction anomalies. In view of these cases of mydriatic glaucoma, ought the use of mydriatics for the purpose named to be abolished or limited? Timid and cautious men will hesitate in answering this question; the reckless will not heed it. It seems to me that the proper answer is the following statement, which embodies the practice which I follow:—

While beyond doubt there are cases of refraction anomalies which can be fitted without the mydriatic, yet it is by no means possible always to decide which demand it and which do not. Accordingly, in cases where there is the slightest doubt, I paralyze the accommodation without wasting time and the money of patients in fruitless examinations. This is, however, done with proper caution. I do not entrust the mydriatic with my patient, I drop it in myself. Nor do I use the mydriatic to the same extent as some practitioners; it is dropped in the eye and the examination deferred for an hour and a half or two hours to allow the mydriatic to produce full effect. If necessary, this is repeated a second or third time, on succeeding days, when the examination is completed. When the examinations have been carefully made, further use of the mydriatic is generally unnecessary, and if the result be not what is desired, I conclude that the error is dependent upon the incorrect answers of the patient or in some other undiscovered defect—generally the latter. It seems to me a mistake to submit patients of this kind to prolonged use of mydriatics under what is doubtless a false assumption that the ciliary muscle is insufficiently acted upon by the remedy. I do not doubt but certain well-known cases which go from one oculist to another, seeking in vain for relief, while suffering from anomalies of refraction have also other elements in their cases which the light of science thus far has failed to reveal. It is of course unwarrantable in cases of this kind to employ mydriatics beyond what is absolutely necessary.

It is assumed in following out the plan described that there is skill on the part of the examiner; a keen and practised observer will often learn from the mere manner in which the patient answers questions whether the examination is proceeding satisfactorily or not, and he need not require much time to ascertain where the fault lies; whether with the method of examination employed or with the patient. It is altogether beyond the limits of this paper to illustrate or specify the details connected with the subject of refraction anomalies: but the point to which I wish to direct attention is that it is possible to use the mydriatic solution employed in refraction anomalies in a reckless and careless way which may prove damaging both to patient and physician. Should obstinate cases occur, before the prolonged use of mydriatics is resolved upon, let careful examination determine whether the fault lies in the imperfect paralysis of accommodation or in some other element. I do not suppose that in a healthy eye prolonged use of a mydriatic can induce the glaucomatous state, but aside from the difficulty of determining whether an eye be in normal condition or not it certainly is better not to use the drugs beyond what the necessities of the case demand.

One more point in this connection: before employing mydriatics for refraction purposes it is proper to exercise circumspection with regard to the case, *e. g.*, to examine the state of the accommodation. An instance from my case book will illustrate my meaning.

C. T., æt. 49, carpenter, says that three years ago he began to use glasses for his near work, he used them for perhaps a year then obtained the present pair which are +18. These, are, however, insufficient now, and he accordingly applies to me. R. E., V.$=\frac{20}{40}$; with +48 V.$=\frac{20}{40}$; with ophthalmoscope H.$=\frac{1}{33}$. L.

E., V.=$\frac{20}{70}$; with +48 V.=$\frac{20}{20}$; with ophthalmoscope H.=$\frac{1}{33}$; at 12 inches in order to read Jæger 1, he requires +14 for R. E., +12 for L. E., which are given him. There is nothing abnormal in the fundus of either eye. The tension is not recorded. Now here is a case of rapid failure of accommodation in a man aged 49. Suppose for some reason it would have been desirable to paralyze the accommodation. I would prefer not to do it owing to the previous history of the patient, the rapid increase of presbyopia even though there be no cupping of the disk and no increase in tension, being sufficient cause to avoid the mydriatic.

2. The use of mydriatics for ophthalmoscopic purposes. It is probable that almost all the cases of mydriatic glaucoma have been induced in cases when the drug has been used to produce dilatation of the pupil. It is easy to understand why it is so; a patient applies to a physician on account of failing sight: the lens is slightly cloudy or cornea steamy, pupil small, the background, as in the case described in this paper, very imperfectly seen. (The optic disk of sound eye which I examined the day of the operation was seen with great difficulty.) The tension seems to be physiological. Of course any one may fall into the trap. Certain precautions may therefore be mentioned when it is desirable to dilate the pupil. *a.* The examination of the tension and the field of vision. *b.* The use of weak solutions of the mydriatic, the assumption being that the weaker the solution, *cæteris paribus*, the less likely to have ill-effects from its use or at all events the more easily will they be combated by proper remedies. The natural tendency is to use the first solution that comes to hand, be it strong or weak, from lack of thought or ignorance. Every one who uses mydriatics ought to make it a standard rule never to employ a stronger solution than the necessities of the case demand. A $\frac{1}{4}$ gr. solution of atropia or a corresponding solution of any mydriatic may be used as a standard solution for dilatation purposes. *c.* Suppose we find after dilatation of the pupil that the eye is glaucomatous, what is to be done? Evidently one had better not await the signs of the onset of acute glaucoma but begin at once the use of eserine and morphia.

3. Suppose, however, the acute glaucoma be developed, what further is to be done? This brings us to the question of operation. The question is a difficult and delicate one, chiefly from the danger of starting the disease in the other eye. Nevertheless I think the responsibility must be assumed, without shrinking or without delay, by all concerned; we may not temporize by using eserine, pilocarpine, morphia, etc., when the vision has diminished to counting fingers, and the conjunctiva is injected. Every surgeon of experience in this disease understands the dangers of delay at such a time; a day or two of glaucomatous pressure may so damage the delicate retinal elements as to turn what seems at first a brilliant operative success into a total failure. Thus I have seen by operation vision rise from barely counting fingers to $\frac{18}{40}$, but sink again in the course of months from the cause mentioned to bare light perception.

1535 Pine Street.

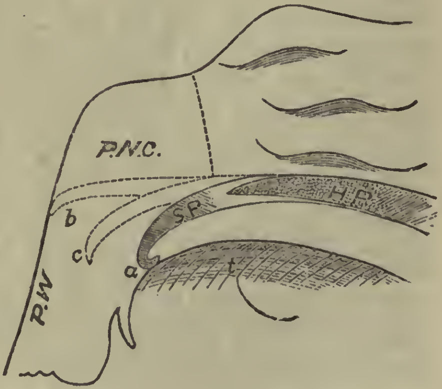
ARTICLE X.

THE SOFT PALATE AND UVULA AND THEIR FUNCTIONS.

By WHITFIELD WARD, A.M., M.D., Physician to the Metropolitan Throat Hospital.

THE physiological action of the velum pendulum palati is under the especial control of three groups of muscles, viz., the levators, the depressors, and the tensors. The first group comprise the levator palati muscles, the second the palato-pharyngi and palato-glossi, and the third the tensor-palati. During deglutition, when the morsel of food has passed over the epiglottis, the palato-glossi muscles, the constrictors of the fauces, contract behind the food, the soft palate is slightly raised by the levator-palati, and made tense by the tensor-palati, and the palato-pharyngi contract and come near together, the uvula filling up the slight interval between them. During phonation the movements of the soft palate are both remarkable and instructive. In most of the works devoted to laryngology, although great prominence has been given to the physiology of the larynx, scarcely a line has been devoted to that of the palate and its attached uvula. Why this is so, I am unable to state. But this I am confident of, that the velum and uvula play an important part in the production of nearly every tone that issues from the vocal organs, and without their proper action singing is out of the question. The tone-waves which are created by the vibratory action of the vocal cords pursue three different courses in their journey from the body, viz., through the mouth, through the nose, and through the mouth and nose combined. The direction which each wave takes depends entirely upon its position in the voice-register. In some cases the majority if not all of the positions assumed by the velum can be observed without the help of the tongue-depressor, whilst in others, especially where the tongue is thick or unruly, this instrument is indispensable. During the production of tones that are emitted through the nose alone, the free border of the velum, throughout its entire extent, rests upon the dorsum of the tongue, thus shutting off all communication between the fauces and anterior buccal cavity, and creating, as it were, two distinct compartments. This valve-like action of the soft palate is a very important one; for, by so doing, the length of the human musical pipe is increased. If, during the intonation of certain notes, the pendulous velum should be pressed up against the pharynx, exactly the same effect would be produced as though a piece of the upper extremity of an organ-pipe were to be cut off, namely, the placing of the note higher in the scale. The posterior pillars of the fauces play a most important part in the formation of this, what might be called, "annex" vocal tube; since by the contraction and relaxation of the muscles forming these columns, the diameters of the above-described cavity are made to increase and diminish, in order to exactly conform to the varying dimensions which the larynx assumes during the production of certain tones.

During the intonation of sounds that pass through the mouth alone, the free border of the velum is pressed tightly against the upper surface of the pharynx, thus cutting off all communication between the mouth and posterior nasal cavities; the human musical instrument is thus materially shortened. In the production of these tones the roof of the mouth, made up of hard and soft palate, acts the part of a complete sounding-board, increasing the timbre of the voice, and greatly adding to its beauty. During the singing of tones that issue in the same degree from both nose and mouth, the velum is poised in the posterior part of the buccal cavity, at an equal distance from the posterior wall of the pharynx and base of the tongue. Let us examine a vocalist during the singing of the scale with the full chest register. At the intonation of the lowest note, the velum rests throughout its whole free edge on the base of the tongue, and there is no communication between the cavity immediately beyond this pendulous body and that in front of it. As the performer ascends in the scale, the velum lifts itself from the tongue, at first forming two semicircular openings on either side of the uvula. When a middle note of the register is arrived at, the valve-like palate is suspended in the mouth at an equal distance from the pharynx and tongue. As soon as the higher tones are reached, the body is approximated to and touches the posterior wall of the pharynx, at first only in three places, viz., at the site of the uvula, and at either extremity, thus forming, as in the case of some of the lower notes, two semicircular openings. When the highest note of the register is sounded, the pendulous velum is drawn tightly up against the pharyngeal wall, and no communication whatsoever is allowed to exist between the buccal and posterior nasal cavities. The subjoined cut will serve to illustrate the three different positions assumed by the soft palate, as described above. *a*, representing its location during the production of tones that issue through the nose alone. *b*, the location of the velum during the production of tones that issue through the mouth alone; and *c*, its location during the production of tones that issue in the same degree from both nose and mouth.



The truth of these assertions can be easily demonstrated by any person possessing slight vocal abilities. All that is necessary to do is to compress the anterior nares so as to preclude the possibility of air escaping therefrom, and produce the tones above described. Those that proceed entirely through the mouth will, of course, be unaffected by such pressure, while those emitted through the nose alone will be entirely gone, or greatly muffled.

The physiology of the uvula is none the less remarkable, since very many of the actions of the velum are entirely under the control of this important little body. The uvula is the supporter of the soft palate. In order that the velum pendulum palati shall perform its functions in a normal manner, it must be kept from vibrating. If perchance this body should vibrate during intonation, a sort of tremulousness would be imparted to the voice, and the whole beauty of the singing be utterly destroyed, or seriously compromised. In order to examine fully the movements of the uvula, it is necessary to resort to rhinoscopy. Those cases in whom the interval between the soft palate and pharyngeal wall is marked afford the best advantages for examination. Presuming that the uvula is of the normal size, let us examine one of these cases during singing, and tabulate the result. While the free border of the palate is resting on the base of the tongue the uvula lies dormant on the surface of the same organ; but as soon as the velum elevates itself the uvula begins to act, rising up from the tongue, where, in the first instance, it was extended for its full length, in proportion as the velum recedes from the latter body. When the pendulous palate has reached a certain point in its journey upwards the uvula is depressed to its fullest extent, touching the tongue only at its tip end. Generally speaking, the point of suspension above alluded to is midway between the pharynx and the tongue, normally poised. At this time the tongue begins to take an active part in the above movements, for when the tip of the uvula just touches the dorsum of the tongue, this latter organ begins to elevate itself at the base, assuming gradually a more and more convex position as the velum ascends. This action on the part of the lingual organ, is for the purpose of continuing its support to the velum. The degree of convexity, which is reached by the tongue, is regulated by the distance at which the soft palate is placed from the pharyngeal wall. As soon as the tongue ceases to rise, and thereby fails to afford support to the velum, the azygus uvulæ muscles begin to contract, and the uvula is seen to be speedily drawn upwards. When these muscles begin to contract there appears on the posterior surface of the soft palate a slight prominence, which in its inception is scarcely noticeable. Upon carefully inspecting the posterior nares, with the valuable assistance of the rhinoscope, during the workings of the azygus uvulæ muscles, it is seen that the prominence just alluded to increases or diminishes in size, according as the uvula is drawn up or relaxed. What then is the function of this which has been aptly termed the azygous prominence? It is akin to that of the uvula itself, furnishing support to the soft palate when the uvula fails to perform this important duty. Were it not for this action, as soon as the apex of the uvula became separated from the base of the tongue the velum would be free to vibrate at will, and the singing voice be seriously affected. Before concluding, I would say one word regarding the amputation of the uvula. In order that the uvula shall perform its function of supporting the velum properly, its dimensions must be normal. It is impossible to set down any standard length by which the surgeon can be guided. The only safe rule which can be employed, is to gently depress the tongue and measure the distance from its base to the quiescent velum. The tip end of the normal uvula will just touch the lingual organ during the above manipulation. What will be the effect of an elongated uvula upon the velum pendulum palati? It will seriously compromise its action. The maximum amount of interference will be manifested during the production of tones that pass entirely through the mouth, and the minimum amount during the rendition of sounds that pass entirely through the nasal passages. In the first instance the voice will be interfered with in two distinct ways: 1st. The complete approximation of the palate to the pharyngeal wall will be prevented on account of the additional weight which the elongated body imposes upon the velum. 2d. The azygus uvulæ muscles will be unable to draw up the entire uvula, hence there will be a relaxed body of varying size directly in the line of the emitted tone. When the tone passes through the nasal passages only the entire uvula rests on the tongue, and is not apt to offer any obstruction. An elongated uvula must interfere with tones that pass partly through the nose and partly through the mouth, not only by offering an obstruction to the egress, but also by bearing down on the velum, which latter act will suffer more air to be transmitted through the nose than is required. Very many practitioners make a grievous error when performing this operation, in that they excise too great an amount of this important little organ. This is a grand mistake, and one that is almost certain to harm the singing voice. If the uvula is wanting, the velum will lose its support in the rendition of nearly one-half the vocal register, hence the currents of air, as they pass from the body, will set this valvelike body into vibration, which will cause a certain degree of tremulousness to be imparted to the voice. I have seen several instances in which the excision of the entire uvula has been followed by the above phenomena. As soon as the surgeon becomes aware that this conical-shape body, which is generally considered as useless, has an important function to perform within the human organism, such cases will be extremely rare.

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ARTICLE XI.

SOME CONSIDERATIONS IN MILITARY SURGERY OF THE FEMUR. (WITH CASE OF EXCISION AT HIP-JOINT.)

By JOHN VAN RENSSELAER HOFF, A.M., M.D., Captain and Asst. Surgeon U.S.A.

THERE is a peculiarity about gunshot wounds so characteristic that it marks a wide difference between the practice of surgery in civil and military life. It has been well said that as a science, surgery, wherever practised, is one and indivisible; but as an art, it varies according to the peculiar nature of the injuries with which it has to deal, and with the circumstances in which it falls to be exercised—more particularly is this true of military surgery, which is ever changing as the conditions and appliances of warfare change. The history of the great campaigns of the world (their tactical evolutions, strategical operations, the climate and country in which conducted, the quantity and quality of supplies, and especially the style of armament) is the history of equally varied changes in the surgery of war. The improvement in arms of precision, the wonderful growth of great guns, the terribly increased destructiveness of missiles, large and small, are but few factors among many which are gradually but surely working radical changes in military surgical practice. Paré wrote in the sixteenth century, "Truly when I speak of the machines which the ancients used for assaulting men in combats and encounters, it appears to me as if I spoke of infant's toys in comparison with these, which, to speak literally, surpass in figure and cruelty the things which they thought the most cruel." Macleod,[1] commenting upon this remark, says, "When Paré thought the cannon of his day so enormous and destructive, what can we say of those huge sea-service mortars and immense cannon used to defend and attack Sebastopol?" and yet these very guns are, in their turn, little more than toys in comparison with the monsters of destruction now in use. As there is ever an increase in the destructive power of arms, there should be an equal, if not greater increase in the power of conservation possessed by the military surgeon. Recent experience teaches us that a real advance has been made in this direction, though certainly until our war of the rebellion statistics present anything but an encouraging picture; while the opinions of authorities were nearly unanimous that any attempts at temporization in gunshot wounds of the femur were, as a rule, not good surgery.

Mr. Holmes[2] says:—

> "In field practice . . . excepting, in certain special cases, in fracture above the knee from rifle-balls, amputation is held by most military surgeons to be a necessary measure. The special cases are gunshot fractures of the upper third of the femur, especially if it be doubtful whether the hip-joint is implicated or not, for in them the danger attending amputation itself is so great that the ques-

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[1] Notes on Surgery of Crimean War.

[2] A System of Surgery, II., 2d Edition.

tion is still open whether the safety of the patient is best consulted by excision of the injured portion of the femur, by removal of detached fragments, and trusting to natural efforts of union, or by resorting to amputation."

He further says:[1]—

"When a patient with gunshot fracture of the femur comes under a surgeon's charge, however free from complications, and however favourable the case may appear to be, the surgeon knows that the patient will be invariably subjected to a wide variety of hazardous circumstances, if an attempt to conserve the injured limb be determined upon."

Dr. Macleod,[2] in speaking of shot fractures of extremities, says:—

"It can hardly be doubted that the great striving after conservation, which influenced the surgeons of our army (English), was one main cause of that mortality which attended these injuries. Full of the promise of the schools, we would not admit that any injury apparently so slight could withstand the assiduities of a wise conservatism," but the author was soon forced to conclude "that though union did in rare cases follow compound fractures in the middle and lower third of the thigh, still the ultimate percentage of loss was greatly less when primary amputation had been performed than when limbs were saved, or tried to be preserved, or removed at a late period." . . .

Dupuytren maintains that,[3] "in compound fractures from gunshot, in rejecting amputation we lose more lives than we save limbs." This opinion was fully endorsed by the French surgeons, and finally John Bell,[4] deducing his conclusions from experience and statistics, says of the attempt at conservation:—

"Taking a retrospective view, we see in true perspective all the dangers of a nine months' cure, which is but a weary travel, step by step, betwixt life and death. In this view, we see the dangers of frequent fevers, wasting diarrhœas, foul and gleety sores; some dying suddenly of gangrene, some wasted by profuse discharge and successive suppurations, new incisions, and unexpected discharges of spoiled bone; we see those who recover halting on limbs so deformed and cumbersome that they are rather a burden than a help. In the very moment that we hear of such a cure, we know how much the patient must have suffered, and how poorly he has been cured: and we can, from the long sufferings of those who escape, tell but too truly how many must die."

During the latter part of the Crimean war, under the most favourable circumstances, and in most favourable cases, selected because injury to the bone and soft parts was comparatively slight, only 9 per cent. of compound fractures of femur recovered without amputation, while 34.7 per cent. in apparently less favourable condition, recovered after this operation.

The comparative value of temporization and amputation in the Crimean and in our own war (1861 to 1865), is indicated in the following table:[5]—

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[1] Loc. cit. [2] Loc. cit. [3] Clinical Lessons. [4] Treatise on Gunshot Wounds.

[5] Shot fractures of thigh occurring during war of 1861 to 1865 (thus far reported and traced to conclusion) are divided as follows:—

	Treated expectantly.			Treated by amputation.		
	No. of cases.	Recovered.	Percentage of mortality.	No. of cases.	Recovered.	Percentage of mortality
Upper third of thigh . .	330	93	71.81	32	8	75.00
Middle third of thigh . .	238	106	55.46	93	42	54.83
Lower third of thigh . .	173	72	57.79	243	131	46.09
Mean percentage of mortality			61.68	....		58.64

	Treated expectantly. Percentage of mortality.	Treated by amputation. Percentage of mortality.
Crimean war[1]	90.30	65.20
War of rebellion[2]	61.68	58.64

Our statistics show an advance of nearly 33 per cent. beyond those of the Crimea, in favor of temporization, and but 3 per cent. in favor of amputation as against the expectant plan, while the results of our amputations are only about 7 per cent. better than those from the same operation in the Crimea. Allowing the 7 per cent. to represent the difference in surroundings and circumstances of patients, and deducting this from the 33 per cent. gain for temporization, we have remaining 26 per cent. to indicate the advance made by conservative surgery. Surely if statistics are worthy of any credit, this exposition may inspire the hope that "new methods" will not, in time to come, prove so unavailing as their "new methods" seem to have in the Crimean war.

If there has been any question in the mind of the military surgeon as to the value of conservation in shot fracture of shaft of femur, there seems to be no doubt upon that subject in its relation to gunshot wounds of the hip-joint; they certainly are to be treated conservatively, apparently, because in any event the same fatal result must obtain. To again quote Bell:[3] "As for a wounded joint, we may take the united experience of all surgeons, which has established this as the true prognostic, that wounds of the joints are mortal." Macleod admits this conclusion with a reservation. He says:[4] "No class of gunshot injuries prove more uncertain in their results, or are more commonly followed by disastrous consequences." While military surgeons agree that there is little to hope from temporization, amputation and excision have thus far given equally unfavourable results; though it is questionable whether the latter method has been sufficiently tried to deduce from statistics of the operation any logical conclusions. There seems to have been some hope during the Crimean war that good would result from more frequent resort to the operation of excision; but it never came into general use. Of six excisions of the hip-joint, primary and secondary, but one case recovered; this was a primary operation, and naturally led to the conclusion that primary excisions were much more successful than secondary, an opinion justified by the statistics; but the number of cases was too small to establish a principle. Moreover, though this one case recovered from the operation, it can hardly be regarded as a successful case, as the patient, though he lived ten years, never had a useful limb. The records of the Italian campaign (1859) are equally discouraging; four excisions were performed, all resulting disastrously, while of the sixty-three operations done during our war (1861 to 1865) but five recovered.

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[1] Macleod's Surgical Notes on Crimean War.

[2] Circular Orders, No. VI., Surg.-General's Office, U. S. A., November 1, 1865.

[3] Loc. cit.

[4] Loc. cit.

On the other hand, amputation at the joint apparently gives more satisfactory results; for including primary, intermediate, secondary, and reamputations of our war, the mortality was 78.84 per cent., though in both French and English armies of the Crimea *all* cases of amputation at this joint proved fatal. In view of the Crimean statistics, M. Legouest[1] maintained that amputation at the hip-joint should be abandoned except when the great bloodvessels are involved. If, then, as a *dernier resort*, the operation is decided upon, it should be delayed until the last justifiable moment—immediate primary amputation must *never* be performed in any case. Baron Larrey[2] indorsed these conclusions, adding, however, an additional indication for operation, in extensive laceration of soft parts about the joint. Brevet Lieut.-Col. G. A. Otis, Medical Department U. S. Army,[3] in his report upon coxo-femoral amputations during the war 1861 to 1865, dissents from views previously obtaining in regard to this operation. He says:—

> "1st. We have learned that the primary operation for traumatic causes is not uniformly fatal, as has latterly been taught, and are enabled to define three conditions under which it should be undertaken, while two other conditions in which it may be justifiable are left *sub judice*. 2d. Much evidence has been brought to controvert the prevailing doctrine that disarticulation at the hip is an exception to the general rule requiring all amputations, deemed indispensable, to be performed immediately, the eighteen intermediate amputations performed during the war having all resulted fatally. 3d. We have proved that secondary amputations at the hip for necrosis of the whole of the femur, or for chronic osteomyelitis following gunshot injuries, may be performed with as successful results as hip-joint amputations for other pathological causes. 4th. It has been shown that when, after amputations in the continuity of the thigh, the stump has become diseased, reamputations at the hip may be done with comparative safety."

With these facts in view, and in the light of experience gained during the Franco-Prussian war, 1870–'71, Prof. Von Langenbeck[4] naturally reaches the conclusion that the statistics of gunshot wounds of the hip thus far obtained, have not established the principles upon which this lesion should be treated. In fact, their teachings have rather resulted in evil, for the very hopelessness with which this injury has been hitherto regarded, leads to a hasty examination, and an equally hasty conclusion that the unfortunate patient was beyond the pale of surgery, because, forsooth, it is written, "wounds of the joints are mortal." Prof. Von Langenbeck believes that an early and accurate diagnosis in these cases is essential to their cure, and that the sooner this fact is realized by military surgeons, the sooner will statistics of the future give very different results from statistics of the past. Of eighty-eight cases of shot fracture of hip-joint in this war, treated conservatively, twenty-five recovered; mortality 71.5 per cent. In thirty resections, four were successful; mortality 86.6 per cent. In thirteen cases of amputation there was not a single recovery.[1] As to the relative value of primary and secondary excisions, military surgeons have little to say, though Macleod and Von Langenbeck, as well as Otis, agree that the earlier the operation is performed the better.[2]

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[1] Mémoires de la Société de Chirurgie, 1860.

[2] Loc. cit.

[3] Circular No. 7 W. D., S. G. O., Washington, D. C., July 1, 1867.

[4] Surgical Observations on Gunshot Wounds of the Hip-joint, translated by J. F. West, etc.

The value of different surgical procedures in the whole number of (thus far) recorded cases of shot wounds implicating the coxo-femoral articulation, is shown in the following table:—

Method of treatment.	No. of cases.	Recoveries.	Percentage of mortality.
Temporization[2]	356	74	79.21
Excision[2]	115	12	89.56
Amputation[2]	171	16	90.64

This, of course, but approximately represents the value of these different methods, for numerical statistics are always doubtful. Especially should we distrust the alleged results from temporization, for the question of diagnosis, as to whether or not the joint is actually implicated, offers a wide field for error. Otis[3] says "I am not satisfied by the evidence in any of the alleged examples of recovery, without operative interference, from gunshot wounds involving the hip-joint, reported by authors or recorded on the registers of this office. I continue to share the convictions of Guthrie and the elder authors as to the uniform fatality of such injuries when abandoned to the resources of nature;" while, to the contrary, other authorities believe we have much to hope from the conservative course. Certainly Langenbeck's statistics (eliminating possibility of error in diagnosis) encourage the belief that Bell's dictum is no longer the "true prognostic."

It is exceedingly unsatisfactory to the searcher after truth that, in spite of all experience gleaned by observers of world-wide reputation, and collated by statisticians of undoubted veracity and ability, we seem to-day so far from solving the problem of conservation. From military statistics of hip-fractures we have thus far learned little, hardly enough to determine

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[1] The sixty-three excisions of the hip-joint done during the war, 1861 to 1865, are divided as follows:—

Operations.		Number of cases.	Number of recoveries.	Percentage of mortality.
Primary	(within 48 hrs. after receipt of injury)	32	2	93.75
Intermediate	(within 3 mos. " " ")	22	2	90.90
Secondary	(any time after 3 months) . . .	9	1	88.88
Mean percentage of mortality				91.17+

[2] Von Langenbeck, loc. cit. S. O. No. 2, Surg.-General's Office, Jan. 2, 1869.

[3] Ibid.

what *not* to do, for between expectation, excision, and exarticulation, the lines are so closely drawn that there could scarcely be an imputation of bad surgery if resort was had to either method of treatment. An appeal to civil statistics of excision in cases of morbus coxarius proves but little more satisfactory, the same doubt of the advisability of this operation, and the same discrepancy in results again meet us. In this connection, I was particularly impressed with the conclusions of Mr. Holmes, as set forth in a clinical lecture on "Results of the Operation of Excision of the Hip,"[1] in which he says, "from what I have myself seen of the operation I should base its claims to adoption, in suitable cases, not on its ultimate results being superior to the natural cure, but on its success in saving life in cases where the natural cure appears improbable." In other words, the operation is to be regarded simply as a forlorn hope, a something to be done, when Nature's efforts have proved unavailing, and the unfortunate patient is about to succumb to the disease. But even this concession has a reservation, for Mr. Holmes further remarks, "we can never say that the natural cure is impossible, except in cases where recovery from the operation of excision is so also."

Such an opinion from such authority is in itself almost enough to condemn the operation. But what is left for our patients? The picture is familiar in all its Hogarthian outlines to every surgeon; our author colours it but delicately when he says:—

> "We know the length of time and the amount of care which such cases require when carious bone has to be gradually removed by ulceration or necrosis, and deep-seated abscesses or long sinuses have to close up. Many patients require years, and some require many years, of the most sedulous care before they are well, or indeed out of danger of a fatal relapse."

The experience of our own countryman is undoubtedly happier than that of English surgeons. Dr. Sayre, whose opinion of excision as an operation might be regarded as that of an enthusiast, did not the successful results of his cases justify it, says:[2]—

> "The most favourable cases healed by kindly nature . . . have been left with permanent deformity, and with a very much less useful limb than those which have been cured by exsection. I have now performed this operation over fifty times, and can, therefore, speak with positive assurance upon this subject."

Mr. Holmes believes[3] that, though the mortality from direct results of the operation is not great, only about one-quarter of the cases operated upon result in a complete and permanent cure; while, on the other hand, Dr. Sayre's[4] cases which recovered, all had "more or less good motion," excepting one, in which the after-treatment was left in other hands.

As to the mortality of this operation in civil practice, the following table, quoted from authorities therein named, will give an approximation:—

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[1] Medical Times and Gazette, London, vol. ii., No. 1427.

[2] American Clinical Lectures, vol. i.

[3] Loc. cit.

[4] Loc. cit.

	Percentage of mortality[1] in civil surgery.
Barwell (London)	36.36
Leisrink (Hamburg)	63.60
Sayre (New York)	25.00(?)
Mean percentage of mortality	41.65

Which is in somewhat striking contrast with the results of the same operation, as recorded, in four wars.

	Percentage of mortality in military surgery.
Crimean war	83.33
Italian campaign, 1859 (French)	100.00
War of rebellion	91.17
Franco-Prussian war	86.66
Mean percentage of mortality	90.29

There can be no question that the circumstances under which this operation is performed in the one case and in the other differ widely, so far as the primary operation for shot fracture is concerned, but the conditions of patient and place in the secondary operation are not necessarily so far removed from those which obtain in the same operation for morbus coxarius that the military surgeon can afford to leave the latter entirely out of consideration. The differences of opinion which undoubtedly exist between civil surgeons as to the value of excision in disease of the hip find their counterpart in the same differences which army surgeons entertain relative to the proper treatment of shot-wound of this joint. In the hope of contributing towards the final solution of these questions I present the following case:—

CASE.—Sergeant W. L., Company "M," 4th U. S. Cavalry, admitted to Post Hospital, Fort Fetterman, Wyo. T., March 29, 1877, with gunshot wound of right hip-joint; is an American, aged 22 years. L. was wounded in a cavalry fight with Cheyenne Indians, November 25, 1876. The bullet (probably conoidal, calibre 50, weighing 412 grains) entered right groin three inches below and slightly internal to anterior superior spinous process of ilium, and two and three-quarter inches external to symphysis pubis, passing obliquely backward through hip-joint it fractured neck of femur, notched posterior segment of rim of acetabulum and made exit in gluteal region at point on a right line joining the great trochanters, twelve and three-quarter inches from left, and four and one-quarter inches from right sides (present dimensions). Immediately after receiving wound pa-

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[1] The percentage of useful limbs is estimated as follows:—

	Percentage of useful limbs.
Barwell	67.85
Holmes	42.84
Sayre	99.00
Mean percentage	69.89

tient was carried to rear, had a plaster-of-Paris bandage applied, was dragged on a travois[1] over an almost impassable country, during weather so cold that mercury froze, reached supply-camp on third day, when plaster bandage was removed and reapplied; and finally, he was carried thence to Cantonment Reno in an ambulance wagon. Patient was received into a temporary hospital at latter place after a five days' journey over a country where roads are unknown, in weather of the utmost severity, and under circumstances of hardship which skilful care and unremitting attention could but little alleviate. A week after arrival at Reno the plaster bandage was removed, the limb elevated, and the wounds front and rear, now discharging pus freely, were treated with simple dressings. In four weeks the wound of entrance closed, and, though the exit was still discharging, an immense abscess formed in and about the joint which pointed in anterior cicatrix; finally opened spontaneously, and remained so for several months. A light extending weight was used for a short time, and no medicine given, except occasionally morphia for pain and physic for constipation.

March 24, 1877. Patient was transferred from Cantonment Reno, and after five days' journey on a stretcher, slung in an army wagon (a very comfortable method of locomotion), reached Fort Fetterman, Wyo. I found his condition as follows. Very emaciated, pale, and pain-worn; weight about 100 pounds (striking contrast with the 180 pounds, weighed at date of injury); thoracic and abdominal viscera apparently healthy;[2] pulse and respiration greatly accelerated; two suppurating sinuses were found leading into articulation in positions already indicated; and both hip and knee-joints ankylosed (fibrous). Patient had not moved from recumbent position since receiving injury, and could not even be raised upon a bed-pan without great pain. Immediately upon arrival he was put under tonic treatment, with milk-punch, cod-liver oil, and generous diet; the wounds were dressed with carbolic acid solution (one per cent.); the bowels freely opened and kept regular. When patient had fairly recovered from exhausting effects of journey, a side splint, after Sayre's short splint, was applied, which enabled him to be moved without pain (this was relieved when in bed by an extending weight of eighteen pounds). He soon grew sufficiently strong to walk about on crutches, and until a few weeks before operation, took considerable exercise in the open air. Morphia was given hypodermically from time to time in increasing quantity to allay pain, never absent. These measures were instituted in the hope that suppuration would be checked, bony ankylosis result, and the patient recover with a stiff but moderately useful member. Unlike those cases of morbus coxarius which have progressed to the third stage and left the leg distorted and dislocated, here we had neither of these conditions, the limb was straight, in its proper place, and exactly like its fellow, except there was no joint at the hip, only a suppurating sore, which discharged so freely as to leave no doubt of the presence of carious bone in the articular cavity. Certainly, if there was ever a case of hip-disease (traumatic or idiopathic) which held out reasonable hope of recovery under the expectant plan, this was one; and it was in this belief that I instituted the line of treatment already indicated. The patient had everything in his favour,—a comfortable habitation, plenty of nutritious food, sufficient air and exercise, the most careful attention, and yet, though, at first, there was an apparent gain, I came finally to see that he was gradually but surely failing; the suppuration still continued as profuse as in the beginning, and confirmed a suspicion long entertained, but which could not be verified previous to operation, that when the neck of femur was fractured, the round ligament ruptured, and the head of the bone lay, a foreign body, in the joint.[1]

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[1] A rude horse litter.

[2] There were functional derangement of heart and anæmic murmurs, but I could discover no organic difficulty, either of heart or lungs. The remarkable rapidity of pulse and respiration in this case are features of no little interest. There seems to be no definite relation existing between these and the temperature, and no apparent cause. A similar case is reported to have occurred during the Crimean war. The operation was secondary, after shot fracture of neck of femur, not implicating head of bone. The patient lived two weeks, and finally died of exhaustion; while he lived the pulse remained very high, never below 120, though his aspect was so calm "it led one to expect a more subdued state of the circulation." (McLeod's Notes on the Surgery of the Crimean War.)

It was simply a question as to whether or not the patient had sufficient strength remaining to get rid of dead bone still in the joint, which must yet be considerable in amount. I believed not, for he grew so feeble, and complained of so much pain towards the last, it seemed to me but a question of weeks between an operation or death. The expectant plan had been fully and fairly tried. The patient had suffered "all the dangers of a nine months' cure," with its weary travel, and I now resolved to operate at once. The excision (after Sedilott) was done September 28, 1877, and the condition of joint found to be as surmised. There was partial bony anchylosis; spiculæ of bone (after the manner of flying buttresses), had been thrown out front and rear, and though yet but slight, firmly bound the femur to the pelvis; in the cotyloid cavity lay the caput femoris, reduced to half its normal size, and more resembling a petrified sponge than the dense head of the femur. This mass was easily removed; 2¼ inches of shaft of femur (including trochanters) sawn off, a small spicula of dead bone gouged out of notch in acetabulum, and the fibrous adhesions about knee-joint broken up. This completed the operation; easily performed, and almost bloodless. There was a large abscess burrowing along femur about five inches, filled with pus, which discharged through incision. The neck of femur looked rather as though it had been cut across by some sharp instrument, than fractured by a bullet, and was not fissured in any direction; the acetabular cavity was apparently healthy. The wound was thoroughly cleansed, a long drainage tube introduced, the edges approximated with sutures, and dressed antiseptically; not a single ligature was used during or after operation; the hemorrhage was slight; purulent discharge profuse. Extension straps and bandages were then applied, and the patient placed in a double splint[2] of domestic manufacture, somewhat after the fashion of Sayre's "cuirass," with an extending weight of eighteen pounds.

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[1] I was present at a clinic held by Prof. Sayre, in Bellevue Hospital, N. Y., a few years since, when he operated on a case of morbus coxarius, presenting exactly these features. The patient, a child, had fallen upon the hip and sustained an intercapsular fracture of femur with rupture of ligamentum teres; when the excision was done, these conditions were at once diagnosticated and verified.

[2] This splint is simply a light iron frame, made to loosely fit the lower extremities posteriorly, and extending from the ankle externally to the waist, internally to about two inches below the perineum. The limbs are placed at an angle of 15 or 20 degrees to facilitate use of bed-pan. Such a splint can be made by any blacksmith; and though not so expensive an instrument as the Sayre "cuirass,", I think, answers

Sept. 28 (after operation). Patient quite weak. To have sp. vini gallici ℥iij in divided doses, at short intervals. Effects of anæsthetic having disappeared, complains of intense pain in hip and knee-joints. To have morph. sulph. gr. j (hypodermically) at 1 P. M.; gr. $\frac{1}{4}$ at 2 P. M., and gr. $\frac{1}{6}$ every hour after if necessary. (Took altogether in twenty-four hours gr. $2\frac{3}{4}$.)

29*th.* Doing well; opiate allayed pain; patient passed a comfortable night; dressing not changed; no perceptible odour from wound; temperature normal; pulse 100. To have sp. frumenti ℥iv. in a quart of milk during day; quiniæ sulph. gr. j every two hours; morph. sulph. pro re nata; not to exceed one grain in twenty-four hours; milk diet.

30*th.* Complains of considerable pain. Wound dressed; discharge very free and somewhat offensive, slightly tinged with blood; to continue treatment, and have oil bath once daily. Temperature and pulse unchanged.

October 1. Discharge copious, saturating bandage; is healthy, non-offensive pus; wound dressed; bowels constipated. To continue treatment, and have magn. sulph. ℥j. A. M., temp. $98\frac{2}{5}$°; pulse 110; respiration 21. P. M., temp. $101\frac{2}{5}$°; pulse 118; respiration 25.

2*d.* Passed restless night; no operation of bowels; to have at 4 P. M. magn. sulph. ℥ss, and, if non-effective, at 9 P. M. calomel gr. x, et jalap gr. v. The latter dose was given; produced free catharsis and great relief. A. M., temp. $101\frac{2}{5}$°; pulse 112; respiration 17. P. M., temp. $100\frac{2}{5}$°; pulse 115; respiration 24.

3*d.* No apparent change; still requires morphia in varying amounts, and constantly complains of pain; wound dressed; edges here and there uniting by first intention; drainage-tube acting effectively. A. M., temp. $98\frac{4}{5}$°; pulse 104; respiration 21. P. M., temp. $99\frac{4}{5}$°; pulse 106; respiration 17.

4*th.* Passed restless night; complains of griping pain in bowels; is weak from continued catharsis; has tenesmus; wound dressed; is doing well; discharge still very profuse. To omit quinia; continue treatment; have sp. vini gallici ℥j 10 A. M. and 4 P. M., and suppository, opium gr. vj at 7 and 9 P. M. A. M., temp. $99\frac{3}{5}$°; pulse 103; respiration 27. P. M., temp. $98\frac{4}{5}$°; pulse 110; respiration 24.

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every purpose, and has at least two virtues not possessed by its more elegant prototype—cheapness and accessibility. The method of application is as follows: Splint having been thoroughly padded (the padding resting upon roller bandage, carried from side to side of each limb from bottom to top, a small space being left for defecation), the patient is placed therein, and secured by bandages from ankle to groin, and a belt about the waist; the foot-piece, a bit of board, is movable on the injured side, and perforated with holes through which pass the extending straps, to be secured to a bar attached to splint, or to rope carrying weights and playing over a fixed pulley. On the sound side the foot-piece is fixed, the foot presses against it, the leg is securely bound and affords perfect counter-extension. If a patient has to be moved from camp to camp, or from bed to bed, the extending straps are secured to the bar, and he can be carried with the least inconvenience and pain. There is nothing about this apparatus original with me, and I have described it so minutely, simply because I believe it to be very essential to the successful after-treatment of hip-excision cases, and because it is so easily improvised. If iron and a blacksmith are not at hand, the double-splint, made of three pieces of board (not unlike, in form, a pair of wagon shafts), recommended by Dr. Hamilton in cases of fracture of femur in children, would do almost as well, and could be constructed under the most adverse circumstances.

5th. More comfortable; wound looks healthy; bed-sore on sacrum (chronic since shortly after receiving wound), is spreading in spite of preventive measures; discharge from wound so copious as to keep sore constantly bathed in pus; dressed (with wound) antiseptically. To continue treatment, omitting brandy, and opium suppository. A. M., temp. $98\frac{3}{5}^\circ$; pulse 108; respiration 24. P. M., temp. $98\frac{3}{5}^\circ$; pulse 101; respiration 24.

6th. The great advantage of double splint is fully demonstrated. The patient can be turned on his side to permit of wound being dressed, and moved to another bed while his own is being aired and changed, with the least amount of pain. The extending adhesive straps, causing some uneasiness, were removed and reapplied. A. M., temp. $98\frac{2}{5}^\circ$; pulse 102; respiration 26. P. M., temp. $98\frac{2}{5}^\circ$; pulse 106; respiration 28.

7th. Bowels acting regularly; appetite very capricious; wound looks well; bed-sore still spreading. A. M., temp. $100\frac{1}{5}^\circ$; pulse 125; respiration 27. P. M., temp. $99\frac{3}{5}^\circ$; pulse 120; respiration 30.

8th. Passed restless night; very weak and unable to endure suffering; opiate is given freely up to limit of one grain morphia in twenty-four hours; wound dressed; no unfavourable change in appearance; bed-sore spreading and ugly. A. M., temp. 99°; pulse 102; respiration 24. P. M., temp. $99\frac{4}{5}^\circ$; pulse 124; respiration 21.

9th. Very weak, but cheerful (when pain ceases a little); wound still discharges freely, frequently saturating bandages, and interfering with complete asepsis. (The utmost care was taken to prevent contamination, but not always successfully.) A. M., temp. $98\frac{3}{5}^\circ$; pulse 120; respiration 12. P. M., temp. $99\frac{4}{5}^\circ$; pulse 116; respiration 16.

10th to *16th.* Between these dates condition remained without marked change. Wound was dressed daily, union had occurred, except at two points; one, anterior, communicating directly with large deep abscess; the other, posterior, giving exit to drainage-tube. The bed-sores (several had appeared) were healing kindly, and altogether there was a slow, but sure improvement. Treatment continued. Appetite very delicate.

17th. Passed a very restless night; complains of pain in all the joints, and has diarrhœa. There had been occasional slight spasmodic action of injured limb, not very troublesome. On this date it became excessive, so that one spasm followed another in constant succession, causing excruciating agony; the action seemed entirely confined to ham-string muscles. Wound dressed, discharge less, but healthy; continue treatment. To have potass. brom., gr. v, every two hours; sp. vini gallici, ℥ij, and opium suppository, gr. v, at 9 P. M.

18th. Spasmodic action not quite so severe, though sufficient to cause much suffering. Wound dressed, discharge slight and healthy; bed-sores doing well. To continue treatment, giving potass. brom., gr. x, every three hours, omitting brandy, and opium suppository.

19th. Passed comfortable night, with very little spasmodic action. Discharge from wound so slight and healthy that drainage-tube was removed. Antiseptic dressings continued.

20th. Fever running high; spasmodic twitching continuous, and exhausting. Wound dressed, discharge but slight, looks healthy. To continue treatment, have tr. digitalis, ♏x, every four hours; quiniæ sulph., gr. x, every three hours; potass. brom. et chloral hydrate, āā gr. x, p. r. n. A. M., temp. $102\frac{2}{5}^\circ$; pulse 150; respiration 25. P. M., temp. $102\frac{2}{5}^\circ$; pulse 137; respiration 32.

21st. Spasm almost uncontrollable; is excited by the slightest stimulus, as sudden noise, a touch, draught of air, in fact any unlooked-for occurrence, even the moving of patient's finger. Wound dressed, discharge unchanged; lower sinus contracting; a probe introduced through upper sinus passes in along bone six inches; syringed sinuses with carbolic solution (five per cent), and dressed antiseptically. To continue treatment, reduce potass. brom. et chloral hydrate to gr. v every three hours, and omit quinia. A. M., temp. $101\frac{3}{5}^\circ$; pulse 125; respiration 36. P. M., temp. 102°; pulse 132; respiration 28.

22d. No noticeable change; still complains of great pain. Bowels open and regular; appetite nil, must be forced even to take milk; discharge from wound scanty and somewhat offensive. To continue treatment. A. M., temp. $100\frac{4}{5}^\circ$; pulse 122; respiration 28. P. M., temp. 102°; pulse 132; respiration 29.

23d to *24th.* No improvement; patient very weak, hardly able to endure the slight fatigue and pain of dressing wound; is constantly under influence of narcotics, and continually demanding something to relieve his sufferings. To continue treatment, increase tr. digitalis to ♏xv, every three hours, and have quiniæ sulph., gr. xv, at 9 P. M.

25th. Slight improvement; is brighter, and complains less of pain in hip and knee. Discharge from wound scant, but healthy. To continue treatment, omit potass. brom. et chloral, and have ℞. Strychniæ sulph. gr. ss.; cannab. ind. gr. xv; pulv. rhei, gr. xx; quinine, gr. xxx. M. Divide pil. No. xxx. One pill every three hours. A. M., temp. $98\frac{4}{5}^\circ$; pulse 118; respiration 24. P. M., temp. $99\frac{2}{5}^\circ$; pulse 132; respiration 24.

26th to *29th.* During this time the wound was dressed daily; the discharge was scanty, but healthy; the bed-sores had not healed, but were not spreading; the spasmodic action continued. No change in treatment.

30th. Passed restless night; complains of severe pain of throbbing character about joint; cicatrix, and orifices of sinuses red and puffy; redness extending some distance on either side; discharge slight; dilated lower sinus and reintroduced drainage-tube. To continue treatment, omit digitalis, and have quiniæ sulph. gr. xx, at 9 P. M.

31st. Very copious discharge from wound saturating bandages and running into bed. On removing dressing pus is found pouring freely from drainage-tube and anterior sinus, as well as through the old wound of exit which had opened since last dressing. (This track closed spontaneously shortly after patient arrived.) Wound looks better, and patient feels much more comfortable, though very weak. To continue treatment.

Nov. 1 *to* 5. General condition unchanged; the discharge continued very copious; bed-sores constantly bathed in pus are extending, though superficially; spasmodic actions still a most disagreeable feature; only partially controlled by morphia, of which an average of half a grain daily has been taken, hypodermically, since operation. Wound dressed daily, and treatment continued.

6th. Discharge less copious; again removed drainage-tube; patient very comfortable, though still troubled with the spasmodic jerking; all functions regularly performed.

7th to 10*th.* The sinuses again contracted, and old wound of exit nearly closed; discharge from anterior opening still free, of a thick cheesy character. At every dressing the greatest care was taken to inject all sinuses thoroughly with carbolic solution (5 per cent.), and to maintain compression, both with adhesive straps and bandages, to prevent any further burrowing of pus (from time of operation). Patient complains of copious cold sweats occurring both day and night. To have atropine gr. $\frac{1}{60}$, hypodermically, once daily; be sponged with alcohol and water, equal parts; omit strychnia pills.

11*th*. Discharge apparently entirely from deep abscess, and principally through anterior sinus; legs are twice weekly removed from splint and exercised; both are quite stiff, the right, at knee-joint, especially so; there is here considerable thickening, and some excoriation; the latter due to traction of extending straps. To have quiniæ sulph., gr. x, at 9 P. M., with chloral hydrate, gr. x, during night.

12*th*. Passed comfortable night; took chloral as prescribed at 1 A. M.; discharge quite free from abscess; of a thick, curdy character; non-offensive odour; bed-sores all doing nicely; exit of bullet-track entirely closed; spasm still frequent and painful; appetite improving slightly.

13*th*. The case has now practically resolved itself into one of chronic abscess. In this view, believing that a cure of the abscess would result in successful termination of treatment, and a failure to cure in death of patient from exhaustion, resolved to forcibly distend suppurating cavity with antiseptic solution (Collander's method). Having introduced long tube of universal syringe deep into cavity, injected 5 per cent. solution carbolic acid ℥vj; result, rupture, instead of distension of pyogenic membrane (miscalculation of capacity of abscess, and force applied). Patient without pain; antiseptic dressing, as usual, and continue treatment. To have quiniæ sulph., gr. xxx, at 9 P. M., given gr. v at dose; the whole to be taken in half hour (rule always followed with large doses of quinine). A. M. temp. $98\frac{4}{5}^\circ$; pulse 116; respiration 15. P. M. temp. $103\frac{1}{5}^\circ$; pulse 142; respiration 38.

14*th*. Passed restless night; complains of soreness in tissues of thigh; anterior and external (abscess was posterior and internal); considerable swelling in this region, with boggy feel of cellulitis; wound dressed; discharge very scanty from both openings; no spasmodic action. To continue treatment, and have quiniæ sulph., gr. xl, at 9 P. M. A. M. temp. $101\frac{3}{5}^\circ$; pulse 128; respiration 24. P. M. temp. $104\frac{1}{5}^\circ$; pulse 142; respiration 38.

15*th*. Swelling and soreness of tissues still the marked feature. Introduced hypodermic needle, but could discover no pus; complains of great pain, which patient says is near surface and not at bone as formerly; spasm entirely ceased; discharge from wound slight and healthy. To continue treatment, have tr. digitalis, ♏xv, tr. ferri chloridi, ♏x, every three hours, and quiniæ sulph., gr. x, at 9 P. M. A. M. temp. 101°; pulse 114; respiration 21. P. M. temp. $100\frac{3}{5}^\circ$; pulse 115; respiration 20.

16*th*. Passed very restless night; pain increasing, only partly controlled by narcotic (morphia); is very weak; will eat nothing; bowels constipated; tongue coated and dirty; breath offensive; very little discharge from wound. To continue treatment, have pil. hydrarg. gr. v, and quiniæ sulph., gr. x, at 9 P. M. A. M. temp. $101\frac{1}{5}^\circ$; pulse 115; respiration 24. P. M. temp. $100\frac{3}{5}^\circ$; pulse 116; respiration 20.

17*th*. Discharge from sinuses very copious, saturating bandage and bed clothing; odour exceedingly offensive. Patient slept quite well, and says he has less pain; tissues still very sore to touch; bowels moved freely. To have quiniæ sulph., gr. x, at 9 P. M. A. M. temp. $99\frac{3}{5}^\circ$; pulse 116; respiration 21. P. M. temp. $100\frac{1}{5}^\circ$; pulse 115; respiration 20.

18th. Sweats continue, though not so free; mydriasis complete, much to patient's discomfort; thinks he is losing eyesight; discharge from wound very copious, offensive, and rusty; bed-sores again very troublesome; swelling somewhat diminished. To continue treatment, and have quiniæ sulph., gr. x, at 9 P. M. A. M. temp. $98\frac{4}{5}$°; pulse 100; respiration 20. P. M. temp. $100\frac{2}{5}$°; pulse 110; respiration 30.

19th. Pus pouring out copiously through sinuses, and along track of entrance, which reopened during night; discharge still very offensive and rusty; swelling and pain considerably diminished; complains of nausea. To continue treatment; omit digitalis and iron, and have quiniæ sulph., gr. xv, at 9 P. M. A. M. temp. $100\frac{1}{5}$°; pulse 122; respiration 28. P. M. temp. $100\frac{2}{5}$°; pulse 122; respiration 28.

20th. Patient much more comfortable. Discharge diminishing, still offensive; whole appearance improved, eyes bright, tongue clean. To continue treatment. A. M. temp. $99\frac{1}{5}$°; pulse 103; respiration 18. P. M. temp. $100\frac{2}{5}$°; pulse 111; respiration 23.

21st. Double splint replaced by single straight splint. Discharge still quite free, but non-offensive, and in character very different from curdy matter which came from deep abscess before rupture. There are still some pain and swelling. To continue treatment.

22d to 24th. Continued improvement; less pain and more appetite; discharge still quite free. Bed-sores inflamed and painful. Patient becoming reconciled to new splint, got up for first time (22d) since operation, and by aid of nurse and crutches walked to chair, near bed, and sat in it a few minutes, a position not before assumed in a year; renounced bed-pan, used commode (23d). Treatment continued; had quiniæ sulph. gr. x. each night, and on 24th tr. ferri. chlor. ♏ xv three times daily.

25th. Very little discharge; bed-sores doing well; pain but occasional. Spasmodic jerking again, first time since 13th inst., not so severe as formerly; sweating less; atropine continued as usual. To continue treatment, and have quiniæ sulph. gr. x at 9 P. M.

26th to 30th. During this time improvement was very gradual, the spasmodic action continued, and even extended to left leg; the constant jerking irritated bed-sores, which could not in any way be protected from some pressure. Daily exercise was taken; considerable difficulty experienced with all joints of lower extremities, which were stiff, and sore; massage was regularly employed. Discharge had greatly diminished, and anterior opening of wound track again closed; superior and inferior sinuses very much contracted; probe arrested after entering half an inch. On 27th inst. bowels becoming constipated were relieved by simple enema, and tr. ferri. chloridi omitted. Appetite continued precarious, with but slight improvement. No nausea. Pain still present, relieved by morphine, now reduced to maximum of gr. $\frac{1}{3}$ (hypodermically) in twenty-four hours. Patient had taken milk punch, cod-liver oil, had oil baths and milk diet, occasionally varied with solid food, when he could be induced to eat it, almost continuously since operation. Antiseptic dressing, as usual, was renewed each day, an operation much more difficult and painful since removal of double splint. To continue treatment, and have every alternate night quiniæ sulph. gr. x.

Dec. 1 *to* 3. Patient still very weak; handles crutches and moves about with greater difficulty than at first; considerable soreness at hip and knee, and stiffness of all joints; finds it impossible to touch left heel to ground, ankle so stiff; soon gets fatigued while sitting in chair; spasm still persistent; sweats very freely in spite of atropia, and alcohol baths; very little discharge of healthy character. To continue treatment.

4th to 9th. Patient had chill on the 4th, more of a creepy cold feeling than a well-defined chill; probably caught cold while at stool; muscles of face and neck, as well as lower extremities, very stiff; unable to move head forward without assistance, or to open mouth; spasm intense and painful; discharge growing less, is thin and healthy; bowels constipated; abdomen tympanitic; appetite unimproved; sweats profuse. To continue treatment, have simple enema, pil. hydrarg. gr. v. (4th), with Rochelle salts ʒij in morning; chloral hyd. gr. xv every four hours, quiniæ sulph. gr. x 9 P. M. (5th). From 9th instant there was scarcely an untoward symptom, convalescence progressed slowly but surely, stiffness of neck disappeared entirely about 15th instant; tympanitis lasted three days; spasm persisted, but with greatly reduced violence, nearly two weeks after extending weight was removed (27th inst.). Patient had daily exercise, increasing excursions from ward to ward, until finally, January 10, 1878, he took his first walk in open air. Discharge grew less in amount, ceased 13th inst., and dressings were removed entirely 15th inst. Bed-sores all healed, except one on sacrum, nearly closed, dressed with simple cerate. December 27th, side splint was removed and the treatment practically ended. Appetite quickly returned, until it grew beyond satisfaction; patient took meals at table during Christmas week, first time in fifteen months: joints and muscles gradually lost rigidity under massage and use; motion at hip quite free in all directions, and joint sufficiently strong to bear whole weight of body as early as December 30th; sweats disappeared with returning strength. Medicines were discontinued on 17th inst, and afterwards only occasional doses of quinia given.

Shortening of leg on getting up two inches; weight 100 pounds, increased to 127 pounds Jan. 15, 1878; morning and evening temperature varied about one degree for two months after convalescence was established, when it finally settled down to the normal; pulse continued higher than the other symptoms appeared to justify, though at last examination there was no discoverable organic lesion; motion in every direction at hip was sufficiently free to permit of easy locomotion, and the joint surprisingly strong. It is probable that compensatory falling of the pelvis on right side will reduce apparent shortening to about one inch.

In reviewing this case, not the least inportant consideration is, when, if at all, under similar circumstances, should an operation be done? I think there can be little doubt that in military surgery, at least, the joint should be excised at the earliest moment after patient has reached an hospital. Prof. Von Langenbeck believes that the mortality attending operation would be less if done within twenty-four hours after receipt of injury. Dr. Macleod also advocates early excision. Such a course has at least three indisputable arguments in its favor: it saves the patient pain, the surgeon work, and the government expense. The extent of operation, the amount of bone exsected, of course will depend upon extent of injury, though it seems to have been the rule in surgery that the trochanters must always be removed, for the alleged reason that their presence mechanically prevents union of incision. Von Langenbeck, Otis, and, more recently, other authorities, condemn such unnecessary sacrifice. It is fair to presume that, in this case, had the joint been simply opened, the detached head of femur removed, a drainage tube introduced, and trochanters left intact, the results would have been even better than those now obtained.

But in any event, the operation, *per se*, is of secondary importance, and we must look for successful results from excision, not in the manner of its performance, but in the after-treatment of the case; herein, I believe, lies the secret which enables Dr. Sayre to recommend excision as the treatment, *par excellence*, for morbus coxarius, a recommendation which, in the light of such statistics as he presents, cannot be ignored. In the after-treatment of this case (as in all secondary excisions for shot wounds of hip), we met with abscesses of greater or less extent, which became the most important elements in its treatment (and an additional argument in favor of primary operations). The spasm, due to rigidity of hamstring muscles, seemed to be governed by no rule; one day severe, the next scarcely perceptible, it baffled nearly every effort at control; narcotics, even in excessive doses, had as little effect as the increasing of the extending weight to thirty pounds or its reduction to six pounds. There was no malposition of limb, and tenotomy was not resorted to, as neither the condition of the patient nor the parts seemed to justify it. A somewhat remarkable fact in this connection is, that with rupture of deep abscess spasmodic action ceased entirely, and did not thereafter recur, excepting very occasionally, with much diminished force.[1]

The object of this paper is to invite the attention of the profession to the fact that, as yet, there is no surgical procedure in gunshot wounds, particularly in shot fractures of femur, so successful that it can be accepted as *the* treatment for such cases. With increasing experience, surgeons are coming to believe that their predecessors have pronounced too emphatically upon methods of treatment and disastrous results of certain gunshot injuries, for they have seen many patients who by the old rules should die, not alone live, but possess such useful members, that their wounds are recalled as hardly more than a disagreeable episode.

Fort Monroe, Va., 1881.

Article XII.

Removal of the Entire Uterus for the Cure of Cancer of the Cervix, with a Report of Two Cases. By Clinton Cushing, M.D., Prof. of Gynæcology in the Medical College of the Pacific, San Francisco.

Case I.—March 1, 1881, I was consulted by Mrs. A. B. for severe pain in the region of the womb. She was apparently healthy, was aged

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[1] L. was returned to duty with his regiment in Texas, where he remained for nearly a year, and was finally discharged the service. The limb became very useful, and permitted of locomotion without crutch or cane.

46, and the mother of several children, the youngest of which was nearly grown. She was suffering the most excruciating pain through the pelvis, her suffering evidently aggravated by the condition of her mind, for she had been examined by several medical men, who had all told her that she was suffering from cancer. She had taken opium in large doses to allay the pain, and had twice tried to commit suicide by taking large doses of laudanum.

Upon making a digital examination, per vaginam, I found the characteristic symptoms of carcinoma—the intense hardness of the cervix, the borders of the os excavated by an ulcer that bled upon the slightest touch. The uterus was perfectly movable, and the surrounding structures seemed free from disease. It was decided to remove the uterus according to Freund's method.

On the following day, assisted by Drs. Plummer, Ellenwood, Regensburger, Jewell, and Farnum, the abdomen was opened in the linea alba, the upper portion of the broad ligaments were ligated, and the ligatures cut short; then, taking a heavy needle fourteen inches in length, sharp at both ends, with an eye near one end, such as is used by mattress-makers, I threaded it with silver wire, No. 14 gauge, and passed either end of a loop of wire into the vagina, so that when the loop was drawn tight, it included the lower half of the broad ligament. The loops of wire were then twisted tightly from the vagina, and the uterus separated from the surrounding tissues by means of a pair of strong, long-handled, slightly curved scissors. The opening in the upper end of the vagina was partially closed by two silk sutures, the ends left long and hanging in vagina. The ends of the wire loops were also left long, so as to project into the vagina. The abdominal wound was closed in the usual way with silver wire sutures. The antiseptic precautions were observed, and the spray was used.

The operation occupied an hour and forty minutes, and was attended with considerable difficulty on account of the large amount of fat in the abdominal wall, and also in the omentum. There was but little loss of blood. Ether was used as an anæsthetic. The shock was very marked. After being placed in bed, and the effects of the ether having subsided, she conversed with her family, but remained very weak, although brandy and ammonia were freely administered. She gradually sank, and died fourteen hours after the operation.

No *post mortem* was made. A microscopical examination of a section of the cervix demonstrated it to be carcinomatous.

CASE II.—Mrs. S. G., æt. 47, a native of Poland, one child, now 24 years of age. Menstruation had ceased two years since. She applied to me Sept. 1, 1881, at the suggestion of Dr. Pawlike, her family physician, on account of a sharp lancinating pain in the region of the uterus, and also because there was a hemorrhage from the uterus after each sexual connection. She was pale and anæmic, and said she had always been a delicate woman.

An examination showed at once the characteristic condition found in carcinoma of the cervix. The cervix was slightly enlarged, very dense, with an excavated ulcer about the size of the end of the thumb surrounding the os. The body of the uterus was quite small, and freely movable. The difficulties attending my former operation, and the fatal result following so rapidly upon its conclusion, led me to a somewhat extended study of the anatomy concerned, and after making several dissections upon the prepared cadaver, I became convinced that the uterine artery, where it is reflected off from the upper portion of the vagina upon the side of the cervix, could be ligated from the vagina before any incisions were made, and the blood supply in this way cut off, in a great measure, from the tissues to be divided in the removal of the uterus.

The operation of removal of the entire uterus having been decided on, on Sept. 4th, assisted by Drs. Lane, Pawlike, Regensburger, and Farnum, the patient was etherized, and placed upon her left side on a table before a window; the largest-sized Sims's speculum introduced, and the cervix seized with a vulsellum forceps, and slightly drawn down; any considerable displacement of the uterus was avoided, in order not to disturb the relation of the parts, for the ureter lies in such close relation to the uterine artery, at the junction of the vagina and cervix, that the greatest danger exists of involving the ureter in the ligature, unless great care is observed, this accident having occurred several times under the hands of the German operators. A strong, short, slightly-curved needle, armed with a heavy silk ligature, was now introduced from below backwards, through the roof of the vagina, by means of a long-handled needle-forceps, the needle passing within a quarter of an inch of the cervix, and including the tissues as high as possible in its sweep. After a ligature had thus been introduced upon either side of the cervix, and firmly tied, the uterus was separated from the bladder by means of a pair of long-handled slightly-curved scissors. Douglas's pouch was opened in the same manner, the fundus of the uterus was drawn down with a vulsellum, and retroverted until the Fallopian tubes and the upper portion of the broad ligament came within reach. A ligature was then passed through the upper portion of the broad ligament, including the spermatic arteries. The blood supply to the uterus was now controlled, and the organ was allowed to return to its position. Now drawing down upon the cervix, and keeping very close to the uterine tissue, the uterus was removed easily with the scissors. There was slight oozing of venous blood from a portion of the right broad ligament, which was easily controlled by a ligature introduced with the needle and needle-holder. The ligatures were all left long, and depending from the vagina. The aperture left by the removal of the uterus was not closed, so as to insure perfect drainage. A Goodman's Skene's self-retaining catheter was left in the bladder, and to the end of the catheter was attached a short piece of rubber tubing which conducted the urine into a small vessel placed between the thighs.

It was supposed that there would be considerable discharge from the seat of operation, requiring frequent vaginal injections, but such was not the case; there was but little discharge, and scarcely any odour. Antiseptic vaginal injections were used every second or third day as needed. For the first week she was nourished entirely by enemata of beef-tea, to each of which were added a few drops of laudanum, and two teaspoonfuls of brandy. She then began to take a thin soup of flour boiled with milk.

Recovery was uninterrupted, the temperature at no time being over 101°. The ligatures came away at the end of four weeks, except one which was removed with some difficulty. She is now, four months since the operation, in her usual health, with no indication, thus far, of a return of the disease. The roof of the vagina is closed by a smooth scar, and no tenderness exists on pressure.

In reporting the above cases I had two objects in view, first, to place upon record the results, in these two cases, of an operation which is still comparatively new, and the value of which is still unsettled; and secondly, the methods employed in the procedure.

In the last operation the sponges, ligatures, and instruments were kept immersed in a five per cent. solution of carbolic acid, and the hands of myself and assistants were washed clean with soap and warm water, and then dipped in the five per cent. solution. The spray was not used. In the first operation the shock was great, the patient evidently dying from this cause; in the second operation there was but little if any shock.

We are compelled to look to Germany for any statistics in regard to removal of the uterus for the cure of cancer, for it is only there that it has been performed sufficiently often to form any basis for an opinion as to its value, and even now, it is too soon to judge, for in many of the cases that are now reported cured, the disease may yet return at the seat of operation and cause death. Olshausen reports six cases of removal of the uterus through the vagina, all of which recovered; he also reports forty-one cases of the operation by the vaginal method performed by others, of these twenty-nine recovered and twelve died. Where the uterus has been removed by abdominal section, the results have been much less favourable. Kaltenbach reports only thirty successes out of eighty-eight operations; and Kleinwaechter reports only twenty-four recoveries out of ninety-four operations. Relapse of the disease will probably materially lessen the number of cases that are above reported as successful.

Dr. L. C. Lane was the first to perform the operation on the Pacific Coast; he operated in 1878, removing the uterus through the vagina; the patient recovered from the immediate effects of the operation, but ultimately died several months afterwards from what was supposed to be the bursting of a pelvic abscess into the abdominal cavity, no post-mortem examination being made.

Without taking up the question of the predisposing causes of cancer of the uterus, causes of which we know but little, it is a matter of prime importance to determine if there be exciting causes which are removable, or which are under our control.

The statistics of England show (Sir J. Y. Simpson) that cancer is nearly three times more fatal among women than among men. No part of the woman's organism is so liable to cancer as the uterus; no part of the uterus so liable as the cervix; and no part of the cervix so liable as the mucous membrane that lines it. What condition, then, is commonly present in the cervix, that would act as an exciting cause? I believe it exists in an unhealed laceration of the part consequent upon childbirth or abortion. We have here a point of irritation that often goes on for years unhealed: enlarged and diseased glands in the mucous membrane; hyperplasia of the whole cervix, and often a continuous and irritating discharge from the diseased surface; surely, we have in these cases provocation enough to set up malignant disease, more especially where there is any predisposing cause.

Waldeyer and other observers have arrived at the conclusion that all cases of uterine cancer are of epithelial origin, that is, commencing upon the surface. Dr. Emmet says that out of two thousand four hundred and forty-seven women in his private practice, who applied to him for some form of sexual disorder, fifty-three cases, or 2.19 per cent., were cancer of the uterus. Of these fifty-three cases, fifty-one had borne a number of children each, and the other two had suffered from criminal abortion; he also says that he has never known a woman to have any form of epithelial cancer of the uterus who had not at some time been impregnated. These are, to my mind, sufficiently good reasons for repairing all fissures of the cervix, when irritable and accompanied by hyperplasia and increased discharge.

From the reports of cases that I have read, and from my own experience, I have been led to the following conclusions:—

First. Do not undertake the operation of entire removal of the uterus if the surrounding tissues are involved in the disease, or the uterus is at all fixed, for the operation is then very difficult, and the disease would certainly return at the seat of operation.

Second. Operate by the vaginal method, it being a much safer one.

Third. Leave the opening made by the removal of the uterus open, so as to allow perfect drainage, there being apparently no disposition to prolapse of the small intestine.

Fourth. Keep a self-retaining catheter in the bladder, in order to avoid its distension, and to prevent the too frequent disturbance of the patient.

I would also suggest that, where it can be done, enough of the diseased structure be removed for a microscopical examination, before the decision is made final as to the advisability of an operation.

ARTICLE XIII.

CENTRAL COLOUR-SCOTOMA—THE ERROR OF ORDINARY TESTS.

By JAMES L. MINOR, M.D., Assistant Surgeon to the N. Y. Eye and Ear Infirmary.

THE method ordinarily employed for detecting central colour-scotoma is to have the patient direct the eye under examination to a small spot on a dark background, 30 cm. from the eye. A small piece of cardboard, about 12 mm. in diameter, of the colour to be tested, is slowly brought from the peripheral portions of the visual field towards the centre, and the point at which the colour disappears is noted. This is repeated for the various meridians, and these points, when connected with each other, will form the boundary line of an area in which the colour is not recognized—a central colour-scotoma—which is accurately and clearly delineated.

In testing for partial central colour-scotoma, or a circumscribed area in the centre of the visual field, over which the perception of a given colour is dulled or diminished but not obliterated, it is customary to adopt much the same procedure, using in this case, however, a small bit of cardboard for fixation, of the same colour as that used for testing the more peripheral colour sense, thus allowing a comparison to be drawn between the colour looked directly at, and that seen in the eccentric portions of the visual field. The small movable coloured card is slowly carried from the periphery towards the centre, and when a point is reached at which this appears of a brighter colour than the central card of fixation, it is noted. This is repeated for the various meridians, and these points are then connected. Thus a boundary line is established which maps out a circumscribed area in the centre of the field of vision over which the colour perception is duller than in surrounding zones—a partial central colour-scotoma.

This way of testing for absolute colour-scotoma furnishes an accurate result, but the method can be improved upon, while that described for partial colour-scotoma is open to the gravest errors. For we there depend upon the comparative brightness of two pieces of card of the same colour seen in different parts of the field of vision; the one placed centrally, and under constant observation, the other in various parts of the field in constantly changing positions. While it is a fact that the normal eye does recognize colours most accurately at the macula lutea, which corresponds to the point of fixation, it admits of easy proof that the most fallacious results may be obtained, if implicit reliance is placed upon it, under all circumstances. And these circumstances are entirely left out of consideration in testing as described above. I refer to the consequences of fatigue of the retina, the importance of which may be judged of by trying the following simple experiments:—

First, a piece of red cardboard, 6 or 8 cm. square, is held before the eye at a distance of about 30 cm., and the eye is fixed upon a piece of black cardboard, 2 cm. square, held over the centre of the red card. After looking at this intently for a half minute or more, the bit of black card is quickly removed, and it will be observed that the space which had been covered by it is of a much brighter red colour than the surrounding red of the card—this bright spot being clearly delineated. The explanation of this is to be found in the fact that all that portion of the retina which had been exposed to the red rays became fatigued by their constant impact, while the small spot which corresponded to the black card was shaded almost entirely from all rays, leaving the retina at that point, when the black card was removed, fresh to respond to the red rays which then impinged upon it.

Second. A piece of black cardboard, 6 or 8 cm. in diameter, with a small central red card, 2 cm. in diameter, for fixation, is held at 30 cm. from the eye, which is directed to the red centre. After a few moments, both the black and the red cards are removed, and a large piece of solid red card is quickly substituted. It will be observed that a dull red or brownish spot, corresponding in size and position to the space which had been covered by the central bit of red card, is seen upon the now red field. In this instance, that portion of the retina which received the image of the small red card, became fatigued, the *red nerves* becoming exhausted—while the remaining portions which had been shielded by the black card, responded, with that vigour which rest affords, to the red rays suddenly falling upon its surface, creating the anomalous condition of the appearance of a bright red periphery with a dull brownish centre, when viewing a card of uniform red color. The contrast thus afforded by a *simultaneous* comparison of the apparently different colours is striking. It is just this condition that is brought about when we attempt to map out a partial colour-scotoma by the method of testing usually employed. The central coloured card which is used for fixation and comparison does not change its position, hence its image falls upon a part of the retina, which, though in the normal condition, is extremely sensitive to changes in colour, soon becomes exhausted, and it is then unable to compete in colour-perception with the fresh and untired parts of the retina more distant from the centre, which, under ordinary circumstances, are deficient in colour-perception as compared with the centre. Tested in this way, the scotoma (partial) enlarges and becomes more pronounced, *pari passu*, with the retinal exhaustion of the centre, which increases every moment during the test.

To obviate the central retinal exhaustion, and at the same time to furnish a means of comparison between the central and peripheral colour perception, I have made disks of coloured cardboard about 30 cm. in diameter, which are used as follows: The patient is directed to look at the centre of the coloured disk, and if either an absolute or a partial scotoma exists, it will be plainly mapped out upon the card, where the patient can himself trace the outlines; and this may be kept as a permanent record of the case; or, if tracing-paper of sufficient transparency be at hand, this may be placed over the coloured disk, and the tracing be done upon it, rather than upon the cardboard, which can be preserved for further use. If neither the disk nor coloured cardboard of sufficient size be at hand, we may take the two small bits of cardboard used in ordinary tests, and compare the acuteness of colour perception in various parts of the field of view by placing them, at the *same time*, in different positions, thus allowing a *simultaneous* comparison between them.

A very delicate test is to use a disk of a compound colour,—pink, for instance, which is made up of blue and red, and it is placed among the reds by ordinary observers; with the red blind, the blue only is recognized, and the pink is by them referred to the blues. Hence an individual with a complete or total central colour-scotoma for red would, on viewing a pink disk, have the scotoma appear as a blue spot, surrounded by the pink, which is correctly perceived in the more peripheral parts of the fundus. A partial or incomplete central scotoma for red, would appear blue in proportion to the blending of the perception of red.

139 EAST 30TH ST., NEW YORK, N. Y.

ARTICLE XIV.

IS THE OVARIAN CELL PATHOGNOMONIC?[1] By W. A. EDWARDS, M.D., of Philadelphia.

THE accurate diagnosis of ovarian tumour is of vital importance, as mistakes are by no means rare, even among our most skilful diagnosticians. For example, John Hunter diagnosticated an ovarian tumour, and tapped the woman, who a short time afterwards was delivered of a child showing the marks of the trocar on its shoulder.

Dr. Washington Atlee mentions a case of pregnancy mistaken for ovarian tumour; the woman was tapped, causing a miscarriage of twins. Mr. Spencer Wells, with his great record in ovariotomy, is obliged to acknowledge twenty-nine mistakes. Of eighty-one cases in which the operation was attempted (*The Principles and Practice of Modern Surgery*, Robert Druitt) no tumour whatever was found in five, and in six others it was not ovarian.

The means of preventing these mistakes are well known, as: Inspection, palpation, percussion, auscultation, the spectroscope, the pulsations of the abdominal aorta (which, according to Dr. Walter F. Atlee,[2] are pathognomonic), chemical analysis, and the microscope. All methods but the last-named are so well known and tried, that it will not be necessary to discuss them here; it is to the latter, the microscope, that the profession has looked to save it from these embarrassing mistakes. The sac of the tumour presents nothing of a typical or diagnostic value, as the tumour is an epithelial epigenesis of the Graafian vesicle.

But the fluids of the ovarian tumours reveal abundance of cell forms, thought by many to be characteristic. These fluids, under the microscope, often contain oil; blood-globules and plates of cholesterine are frequently seen; epithelial cells, isolated and collected in groups; pus, granular cells, varying in size, which are supposed by some to contain the material upon which the colour of the fluid depends, and a "free, delicate, granular cell" (ovarian cell), which its advocates affirm is characteristic of the ovarian fluid.

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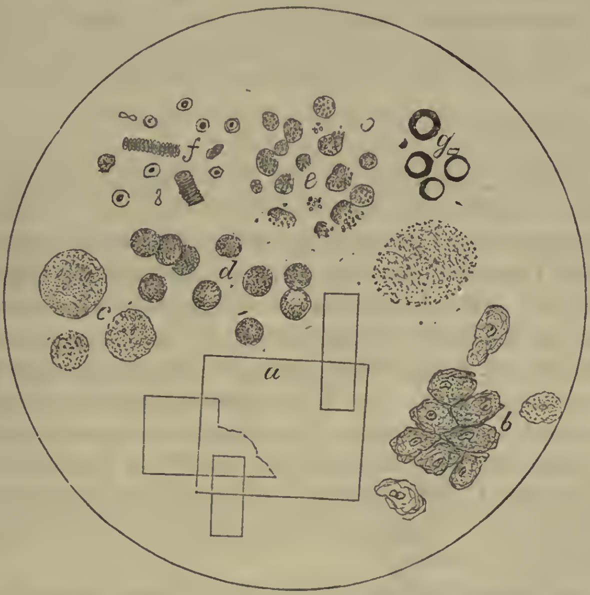
[1] In the preparation of the accompanying paper, I have examined in all about three hundred fluids, both from the American and European hospitals, and from the practice of Dr. Walter F. Atlee, Prof. William Goodell, and the Pathological Laboratory of Dr. Henry F. Formad. The drawing was made under a power of about 480 diameters.

[2] Amer. Journal Med. Sciences.

The accompanying drawing represents a characteristic ovarian fluid, taken from a patient by Dr. Walter F. Atlee, though it is rarely that I have seen one presenting all the features which are given in the figure.



a. Crystals of cholesterine. *b*. Epithelial cells. *c*. Gluge's inflammatory corpuscles. *d*. Pus-corpuscles. *e*. Ovarian cell. *f*. Red blood-corpuscles. *g*. Oil-globules.

It is (*e*) the ovarian cell that most concerns us. I regret to differ with Dr. Washington Atlee, Drysdale, and many other authorities, but my investigations with ovarian fluids lead me to conclude that the "free, delicate granular cell" is *not* characteristic of that fluid, as I have seen it in many fluids which were not ovarian, and have examined ovarian fluids in which it was absent.

In connection with these statements the following letters to Dr. Walter F. Atlee speak for themselves: Mallassez, of the College of France, writes that he often examined liquids to determine whether they were ascitic or cystic.

"Sometimes I have been able to affirm the existence of a cyst; but often, I must confess it, have I remained undetermined. When, in the liquid drawn off, we find epithelial cells clearly recognizable (cells caliciform, cells with vibrating cilia, or simple cylindrical cells), we must admit that these elements proceed from the walls of the cavity that contains the liquid; in other words, that the cavity possesses epithelial lining. This is the case with ovarian cysts. We can thence conclude, that such a liquid is not a peritoneal liquid.

"In fact, in order that epithelial cells be found in a peritoneal liquid there must be communication between the peritoneum, as in some epithelial tumours, which would be revealed by clinical examination.

"When the abdominal liquid does not contain recognizable epithelial cells, but if it contains a notable proportion of granular bodies or crystals of cholesterine, there is still probability that there is an ovarian cyst. Several times I have made myself sure of this. When in the liquid exhibited only some white or red globules exist, the diagnosis appears to me to be very uncertain; such liquids can come just as well from a cyst as from ascites.

"So much for the microscopical examination; now for the chemical analysis. If it is even well established that paralbumen is only met with in ovarian cysts, but never in ascitic fluids, we would have then a very good diagnostic sign. Unhappily I am not able to give you personal information on this point. 20th August, 1878."

Charles Robin writes:—

"It is lost time to hunt with the microscope to distinguish the liquids of cysts of the ovary from the liquids of serous cysts. We must have recourse to chemical analysis. 17th December, 1876."

Dr. Peaslee, in his book (*Ovarian Tumours*, p. 118), says: "I have not been able to detect them [ovarian cell] in the fluid of all cysts known to be ovarian." Dr. Walter F. Atlee thinks, as he expresses it, "that there is no specific cell in ovarian fluids, just as we no longer look for the specific cancer cell in cancerous growths." Spiegelberg and Waldeyer make no mention of them. Mr. Nunn (Brown, *Ovarian Dropsy*, p. 47) does not attach much importance to them as a diagnostic guide. Dr. Braxton Hicks, of Guy's Hospital, and Dr. W. S. Playfair, of King's College Hospital, London, informed me that they placed no reliance whatever on the cell in diagnosis. The so-called "ovarian granular cell" may be described as follows:—

"The cell is usually round, but occasionally oval; it is very delicate, transparent, and contains a number of fine granules, but no nucleus. These granules have a well-defined outline, and glisten like so many particles of diamond dust. The cells themselves differ greatly in size, but the structure is always the same; they are seen as small as $\frac{1}{6000}$ of an inch, and as large as $\frac{1}{2000}$; in some fluids they are much larger, but they generally correspond in size to the pus-cell. The addition of acetic acid causes the granules to become more distinct, while the cell becomes more transparent. When ether is added, the granules become nearly transparent, but the appearance of the cell is not changed. The granular cell (ovarian cell) is distinguished from lymph, white blood-corpuscles, and other cells which it resembles, both by its appearance and its behaviour with acetic acid. The cell wall occasionally has a wrinkled or puckered appearance, and sometimes in the fresh state is seen a body resembling a nucleus; but with acetic acid it merely shows the granules more distinctly, and increases its transparency.

"Gluge's inflammatory corpuscle is larger and more opaque than the ovarian cell, and has the appearance of a collection of oil-globules. Occasionally it has a cell wall; others are wanting in this respect.

"I might add that a cell is sometimes seen in ascitic fluid, depending upon irritation of the peritoneum, which has been mistaken for the ovarian granular cell. In size and somewhat in appearance it resembles the pus-cell, but shows no nuclei on the addition of acetic acid. Their surface is generally granular, but occasionally appears finely wrinkled. It differs from the ovarian granular cell in that it is semi-opaque, and does not present the clearly defined granules of the ovarian cell. It is, as a rule, of a uniform size, $\frac{1}{2000}$th of an inch in diameter. These cells, however, are not characteristic of the ascitic fluid."[1]

Now if the above-described ovarian granular cell were as thoroughly characteristic as its supporters affirm, all doubt in the diagnosis of ovarian dropsy would be forever at rest; but every-day experience does not bear this out; as, for example, a case occurred in the practice of Dr. Walter F. Atlee, on May 7th, 1880, which presented absolutely diagnostic signs of ovarian dropsy, the fluid, upon microscopical examination, showed the most typical ovarian cells in large numbers, the fluid also gave evidence of containing paralbumen, with the well-known test for that substance; these, in conjunction with the other signs of minor importance to us as microscopists, determined the doctor to operate, which he did upon the above-given date. Upon opening the abdominal cavity by the usual method in these cases, *no tumour* whatever was found!

The following is as much of Dr. Atlee's history of the case as concerns our purpose, together with the microscopical report of Dr. Washington Baker, who examined the fluid:—

"Elizabeth Y., æt. 26, measures 47 inches around the waist, a magnificent specimen of health and strength, two months ago began to be unwell; tapped on May 6th, 1880. Fluid coagulable by heat; acetic acid added and boiled, it redissolved, paralbumen. Microscope showed epithelial cells, nuclei in abundance (so-called ovarian granular cell); blood-corpuscles; reaction alkaline."

Dr. Washington Baker's report, May 11th, 1880, states:—

"The fluid is of a greenish-yellow colour, frothing when shaken; deposits a slightly reddish-coloured sediment. Specific gravity 1018. Reaction alkaline; a trace of albumen. Under the microscope are seen epithelial cells, *granular* cells, blood-corpuscles, and granular matter. Coagulable by heat, nitric acid, and alcohol. Paralbumen and fibrinogen. Therefore the fluid under consideration *belongs* to the group of ovarian fluids."

"Upon operating May 7th, 1880, found no cyst, drew away a quantity of fluid, etc., sewed up, etc. etc. June 8th, tapped the patient, removed eleven pints, which, under the microscope, showed nothing but epithelial cells, blood-corpuscles, and granular matter. Specific gravity 1015. Reaction neutral." The woman at the present writing is perfectly healthy, having had no return of her trouble.

I made repeated, careful examinations of the fluid, all of which confirmed the above-given report. The appearance of the cells was such as is seen in the cut on page 429.

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[1] Dr. Washington Atlee, Ovarian Tumours.

These ovarian cells acted with reagents precisely as the veritable ovarian cell of Drysdale should act. (" The granular cell found in ovarian fluid, by Thomas Drysdale, M.D.," *Transactions American Med. Assoc.*, 1873.) In fact they were in no way to be distinguished from the cells existing in a case in which the tumour is present, and yet, taken in connection with the presence of paralbumen, etc., how thoroughly did they lead Dr. Atlee astray! Dr. William Goodell has recently had a case of abdominal tumour, the fluid of which, on the first tapping, showed no ovarian cells; on subsequent tappings the cells were seen in sparse numbers, but on operating, the tumour proved to be a typical ovarian cyst. The ovarian cell has been seen in the renal cyst and in the pleural cavity, but I have never had an opportunity of seeing it from those situations.

Dr. Hugh M. Taylor has published an article in the *Virginia Med. Monthly* for 1879, vol. vi. page 209, in which he describes the identity of the cells found in fluid from cystic tumours of the neck, scrotum, etc., with the so-called ovarian corpuscles or Drysdale cell.

I make the statement above that I did not consider the "free granular cell" as characteristic of the ovarian cyst; now the question comes up, what is the ovarian cell, and from whence does it arise, if it is not peculiar to, and owes not its origin to, the ovarian cyst?

In examining many fluids, etc., under the microscope, I have constantly met the pus-cell in various stages of degeneration, or in other words, undergoing the process, as I understand it, which would ultimately turn them out full-fledged ovarian cells. Some of the pus-cells would have one or two glistening granules or fine diamond-like points in them, others quite a number, and still others would be breaking up into the "free delicate granular cell" of Drysdale, and could be distinguished neither by the eye nor by reagents from the veritable ovarian cell of that authority and his followers.

In May, 1880, I examined a fluid in the Laboratory of the University of Pennsylvania, with Dr. Henry F. Formad, for Prof. D. Hayes Agnew, with the following result: "The dark fluid, upon microscopical examination, showed red and white blood-corpuscles, pus in stages of degeneration, a very few epithelial cells, and some crystals of triple phosphates." The fluid was drawn from a supposed malignant growth of the rectum, in the male, by a trocar. Some of these pus-cells exhibited but one or two glistening granules, others more, and quite a large majority could be called typical ovarian cells, as it was utterly impossible to distinguish them, either by the eye or reagents, from the ovarian cell found in fluids from the cyst.

If it be true that the ovarian cell is seen in fluids other than ovarian, and also if it be true that it is a degenerated pus-cell, can we not produce this cell artificially? Acting upon this thought, I procured four specimens of healthy, laudable pus: two from amputation stumps, arm and leg, and two from abscesses. I kept these specimens, each in its own tightly corked bottle, for five weeks, as nearly at the temperature of the body as possible. At the expiration of this time I made microscopical examinations of them with the following result:—

In two I got the typical ovarian cell (amputation specimens), proved so by its appearance and its action with reagents. In the third (abscess of leg) the cell was imperfectly developed, some proving themselves true with reagents, others failing in this respect.

In the fourth and last the cells were not developed at all, either in appearance or reaction with tests; so that the result is: In 1st and 2d specimens, I got typical ovarian cells. In 3d, imperfectly developed. In 4th, entirely absent.

I may add that Dr. H. F. Formad informs me that he has performed the same experiment, using, however, only one specimen of pus, finding it, after the lapse of several weeks, crowded with "ovarian cells."

Let me now recapitulate the points which seem to me to have been proved in this article:—

1. The ovarian cell is not diagnostic of the ovarian tumour.

2. We may have a fluid from an ovarian tumour entirely devoid of the ovarian cell.

3. On the other hand, we may have an abdominal fluid which is not ovarian, presenting the cell in great abundance.

4. With the present state of our knowledge, the accurate microscopical diagnosis of ovarian dropsy is impossible; the most distinguished ovariotomists always make their first incision an exploratory one.

In the examination of the above-mentioned three hundred fluids, I have met the ovarian cell so frequently and have known it to be contained in an ovarian tumour, that, while I do not consider it pathognomonic at all, I still think it merits some weight in making our diagnosis of ovarian cystomata.

ARTICLE XV.

VAGINAL CYSTS.

By T. NAYLOR BRADFIELD, M.D., Surgeon to the Women's Hospital, Newark, New Jersey.

TUMOURS designated as vaginal cysts, and credited by the few writers making special mention of such growths as among the curiosities of general practice, have as yet received no settled opinion concerning their true pathology, nor have we, from the little known of their clinical history, been able to decide satisfactorily whether they originate as solid fibrous bodies, and pass by inflammatory changes to the fluid state, or are, with much greater probability, essentially cystic from their inception.

Among the more recent authorities consulted there are but four or five especially notable writers that have so much as referred to the existence of these tumours. The works of Drs. Emmet, Thomas, Goodell, Simpson, Klob, Tilt, Sims, Atthill, Savage, Hodge, Hewitt, and many other like works examined, in no way make the slightest mention of them, and while we were not a little surprised to read in Dr. Barnes's "Diseases of Women"[1] that "several clear examples have come under my observation," he further on speaks of these cysts as "certainly of rare occurrence," and after referring to the cases reported by Drs. West and Scanzoni, gives us in the following brief summary of facts about all there was written or probably known of their cause and pathology up to the date of his publication in 1878.

Dr. Barnes informs us that their origin is not clearly determined, and that "in some cases, possibly, they resemble fibro-cystic tumours of the uterus, the cystic element being specially developed. In others, according to Huguier, they originate in obstructed mucous follicles." Scanzoni, on the other hand, and with greater plausibility we believe, says that accurate information shows these growths always to have been developed in the peri-vaginal cellular tissue, and, according to Rokitansky, their primitive seat is outside the vagina, with which they have only a secondary relation.

From the rarity and uncertain acquaintance we have with the clinical history of these tumours, the report of a case still under observation will prove of interest.

The patient, Mrs. S., of German parentage, 28 years of age, seven years married, five children, no abortions. Enjoyed the very best of health until five or six months after the birth of her youngest child, now three years old. Five or six months following the birth of her last child, she began to suffer with almost constant backache, a profuse leucorrhœa, and what she calls "much bladder trouble;" micturition being sometimes difficult (retention) and painful, and always followed by a heavy bearing-down feeling about the pelvis, and a sense of scalding whenever near and during the menstrual period. She remembers these symptoms as among the earliest and more prominent to attract attention; the leucorrhœal discharge and accompanying irritation (pruritus vulvæ) causing the patient much local uneasiness and marked nervous disturbances.

She has always been free from menstrual trouble, and enjoyed perfect regularity of this function until four or five months ago, since which time there has been no return of the catamenia. Bowels constipated, and sometimes moved with pain and difficulty. Copulation has gradually grown so distressful to the patient and unsatisfactory to the husband that they have mutually abandoned the act.

Mrs. S. informs me that her "family physician," in consultation with two other practitioners, had "carefully examined" her some three or four months before, and had then discovered what they supposed to be a fibrous tumour of the uterus; the growth, as she says her physician told her, could be seen hanging from the mouth of the womb, and she was advised to avoid operative interference so long as it should not perceptibly affect the condition of her general health.

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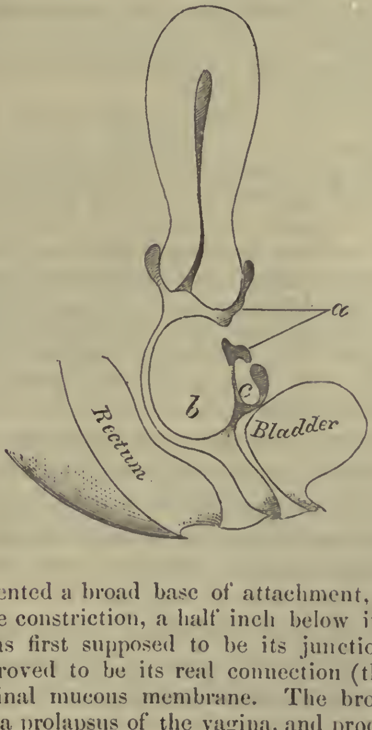
[1] A Clinical History of the Medical and Surgical Diseases of Women, by Robert Barnes, M.D., second American from the second London edition, pp. 759, 1878.

However, alarmed by the very sudden increase in the size of the abdomen, caused, as the patient fully believed, by a rapid and dangerous development of the tumour, she had now come to consult me with reference to its immediate removal, which, as she said, she preferred having done at almost any risk to life, rather than suffer the "anxiety of mind" which the growth of the tumour and its threatened danger continually gave her.

Attempting a digital exploration, the vagina was found obstructed by a rounded body fully as large as a good-sized hen's egg, and imparting to the touch an impression very much the same as that produced by any ordinary fibroid. However, by gently pressing the tumour aside, I was able to pass my finger behind and around the growth to a point *in front of* and a little above the os tincæ, the cervix proving to be free and unobstructed, and presenting the characteristic features of early pregnancy, while the tumour, as already stated, was found to have its point of attachment near the upper angle of the anterior vaginal wall, directly in front of and nearly opposite the os tincæ, or close to the left side of the urethral canal in front of the cervix uteri (figure, *a*), and in this position explaining, no doubt, the "bladder trouble" so long complained of by the patient.



The tumour presented a broad base of attachment, with a slight narrowing, or neck-like constriction, a half inch below its apparent seat of union—or what was first supposed to be its junction with the vaginal walls—but which proved to be its real connection (the constricted portion) with the vaginal mucous membrane. The broad triangular base above proved to be a prolapsus of the vagina, and produced, no doubt, by the dragging weight of the tumour.

The abdominal enlargement complained of by the patient was satisfactorily explained by the existence of a three or four months' pregnancy, a complication wholly unsuspected by Mrs. S., and thought of sufficient importance to make a consultation desirable. Accordingly, two of my professional associates at the Women's Hospital were invited to examine the patient, the growth being again diagnosticated as a uterine fibroid, and its removal advised as an obstetrical or parturient necessity.

Seeing my patient a few days later, and examining more critically than I had yet done the precise form and consistence of the tumour, I discovered what appeared to me a hard, slightly movable, evenly rounded body underneath a thick and loosely investing sac membrane, and leading me to believe that a longitudinal incision through the sac wall would enable me to enucleate the fibrous body thought nestling within.

With this favourable view of the case, I prepared for operation by first placing the chain of a small écraseur around the neck or upper constricted part of the tumour, and dragging it toward the outlet of the vagina, penetrated its walls with an ordinary curved bistoury. No sooner had the first puncture been made than, to my surprise, there began oozing forth a thick viscous substance that at once reminded me of, and in appearances bore the *very closest* resemblance to, the white and gray (mixed) matter of the brain, which is sometimes seen in compound fractures of the skull.

When the tumour had thus emptied itself of two and a half or three ounces of this brain-like substance, and no longer obstructed the vaginal passage, a second and much smaller cyst was found growing from a point directly in front of, and a half inch below (nearer the outlet), the larger one (fig. 1 *c*), and which (in the original position of the two growths) was entirely hidden from view, and undiscovered by any one of the physicians previously examining the case.

Having settled the nature of the larger growth, I now more freely opened the smaller one, and thoroughly evacuating its contents, injected its cavity with Churchill's tincture of iodine, giving the larger cyst no further treatment than the puncture already made, and the daily injections of hot carbolized water and glycerine. Two weeks later the smaller cyst had almost or entirely disappeared, while the larger one had again filled, and was even more painful and troublesome than when first seen.

Again dragging it toward the vaginal outlet, I this time opened its sac wall, "from top to bottom," and after thoroughly removing its contents, treated its cavity with the same iodine injection used for the smaller growth, and with the same fortunate result of seeing it wholly disappear within three weeks or a month.

As to the seat of these tumours, there cannot, in the case above reported at least, be the slightest possible doubt that they originated underneath or in front of the vaginal mucous membrane, or, as Scanzoni suggests, in the peri-vaginal cellular tissue, and where, by fingers and probe, we were able to follow and unquestionably fix the seat of the larger cyst, when a second time relieved of its contents.

It was indeed the certainty with which we were able to trace the cyst to this origin (cellular), behind, or rather in front, or underneath the anterior vaginal wall, that prevented my following Dr. Levis's[1] plan of injecting the cavity with carbolic acid, fearing (from what I had read in Dr. Reichert's[1] paper on cases of carbolic acid poisoning) that the injection of this drug into such a cavity as the larger cyst presented, might possibly terminate disastrously for the patient.

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[1] The Treatment of Hydrocele and Serous Cysts in General, by the Injection of Carbolic Acid. From the Transactions of the Medical Society of the State of Pennsylvania, 1881.

I believe that these tumours were essentially cystic from their very inception. That they are of slow growth we have many reasons for believing; the patient in the present case having been conscious of their presence for nearly two years, while a patient I saw and examined, by invitation of Prof. Alex. Simpson, while attending the clinics of this distinguished gynæcologist, at the University Hospital of Edinburgh, in the summer of 1878, presented a cystic tumour near the junction of the cervix uteri with the vaginal wall (right side) that had existed there, the size of a hickory-nut, for a period of two or three years, and which, if I correctly remember, was diagnosticated as non-puerperal, and to have its probable origin within the peri-cellular tissue; this and the case above reported being the only ones I remember ever to have seen.

106 HALSEY STREET, NEWARK, N. J.
February 13, 1882.

ARTICLE XVI.

A BANDAGE FOR THE TREATMENT OF VARICOCELE. By ROYAL WHITMAN, Surgical Interne at the Boston City Hospital.

THERE are many cases of varicocele where a radical operation would not be advised, for which the ordinary suspensory bandage is not sufficient to prevent the dragging sensations and neuralgic pains which are at times present in almost every case, caused by the constant pressure of the enlarged veins upon the testicle.

Besides the physical inconvenience, this affection is often the cause of considerable anxiety to the patients, who, when their attention has been once called to the affection, often attribute to it numerous other symptoms, real or imaginary. It will also be noticed that in these cases the testicle is almost invariably smaller on the affected side, though normally it is the larger of the two; showing a tendency to atrophy from constant pressure.

Numerous appliances have been devised for the treatment of this affection, but they are all more or less unsatisfactory; first, because patients object to wearing a surgical apparatus for what appears to be such a slight affection, and secondly, because the great majority of such appliances are extremely uncomfortable. The trusses, which press upon the veins in the groin, would evidently aggravate the trouble by impeding the return of the venous blood.

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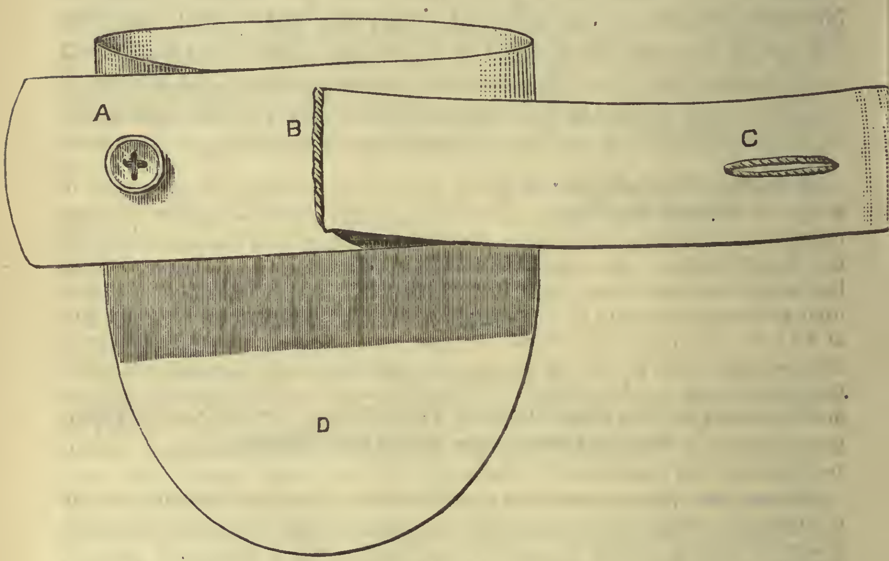
[1] American Journal of the Medical Sciences, October, 1881.

Morgan's bandage, which straps the testicle up into the groin, answers its purpose very well; but it is hard to adjust, often uncomfortable, and exposes the testicle, from its position in the groin, to constant injury.

The following simple bandage has proved very satisfactory. Two layers of linen cloth, or other light material, between the layers of which a piece of thin rubber may be placed to prevent wrinkling, are stitched together, as in diagram, it being the actual size of an ordinary



bandage. The portion D is then placed behind the testicle on the affected side, the two ends of the bandage, A and C, are then brought about the scrotum above the testicle, the end C is then carried through the opening at B, and after again encircling the scrotum is buttoned at A. The portion D is then brought up and attached to the inside of the cross-band by an ordinary suspensory bandage, the bag of which is then placed over the scrotum and bandage in the ordinary manner, almost completely concealing the latter.

This bandage simply inverts the testicle, allowing the mass of veins which were pressing upon it to fall below, while the encircling bands, A and C, which are now below the testicle, keep up a steady pressure on the enlarged veins in a direction which does not impede the circulation, while the elevated position of the testicle favours the return of venous blood. This bandage will at once and completely relieve the uncomfortable sensations. It is easily applied, is comfortable, and costs almost nothing. It may be worn constantly, being applied in the morning before rising, in which case it will prevent any possible atrophy of the testicle, or it may be worn only when the uncomfortable sensations are present. Under its constant use the volume of the veins about the testicle soon becomes reduced, while the testicle increases in size.

Article XVII.

Multiple Polypoid Fibroma of the Nymphæ; a Rare Case.

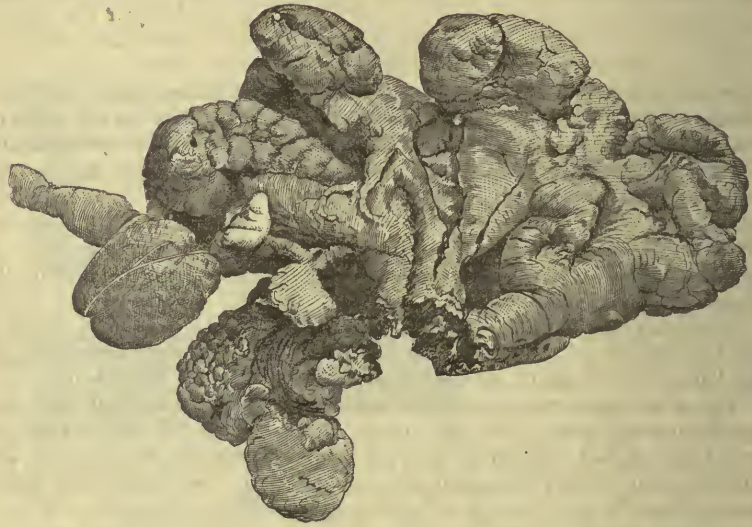
By B. F. Baer, M.D., Demonstrator of Clinical Gynæcology, Instructor in Gynæcology in the Post-Graduate Course, and Chief of Dispensary for the Diseases of Women in the University of Penna.; Obstetrician to the State Hospital for Women, Philadelphia.

M. S., æt. 39, is married and has had four children, the youngest of whom is eleven years of age. Her labours were all tedious, one of them requiring the aid of the forceps. She has been in delicate health since her first gestation. Her menses have always been regular, but she has had a profuse leucorrhœa since the birth of her last child. Her father died at the age of sixty of "consumption of the bowels," and her mother at fifty of "dropsy," the character of which I was unable to ascertain. She herself had a severe pulmonary hemorrhage eighteen years ago, after the labour with her first child, and one year since a slight hæmoptysis for one or two days. At times she has a slight cough. No history of syphilitic infection could be obtained, nor were there any symptoms of constitutional syphilis present in the case.

About four years ago she first discovered at the upper portion of the nymphæ, on either side of the clitoris, two growths about the size and shape of a small mulberry. These grew separately until they had attained a length of about two inches, when they became adherent to one another at their distal extremities first, and finally throughout their entire length. Within a few months after the discovery of this condition, she noticed a number of smaller growths of a like character sprouting out along the line of the labia minora. As each of these younger vegetations reached sufficient development they, in like manner, became adherent to one another at their extremities, and finally joined the parent or main growth. This mass grew to almost its present size during the first two years of its existence, its growth being very slow in the last two. About one year ago she became aware that the vaginal orifice was becoming obstructed by similar vegetations, and later the anal orifice became likewise involved.

She now, for the first time, consulted a physician, Dr. W. A. Davis, of Camden, who kindly asked me to see the case with him. With the patient in the dorsal position, and the parts exposed, the following condition presented itself to view. The labia majora were widely separated by an unsightly, irregularly lobulated mass, which reached from the clitoris to the anus, spreading out and entirely concealing the vaginal orifice.

Each lobule had a very uneven, hob-nailed surface, and that, together with its dark colour, makes it very much resemble elephantiasis in the negro. The whole mass seemed to take its origin from the nymphæ, both of which were involved alike. The clitoris could not be found, and it was probably lost in the growth or destroyed by pressure. The different parts making up this structure were larger at their extremities than at their points of origin, thus giving each lobule a club-shaped appearance. Examination of the under surface of this growth proved its origin to be in the nymphæ, and that it had a number of pedicles (see fig.). Some of these pedicles were adherent to one another along their entire length, while others were independent, the extremities only being attached to the main growth. In no instance was there an excrescence which was completely separate from the main growth, but in several the attachment was very slight. At a number of places there was an appearance as if the pedicle of a lobule had become attenuated by traction on it, and finally separating entirely, the clubbed extremity was left to derive a parasitic existence through its attachment to its fellow. The vaginal orifice, os urethræ, and anus were studded with growths of similar character. These were lighter in colour, and were not so firm on pressure as the remainder of the growth, due very probably to the fact that they were not exposed to the same extent. The skin occupying the coccygeal groove seemed to be undergoing a change in the same direction. The vagina, above the carunculæ myrtiformes, was entirely free from the disease. The skin covering the labia majora was thickened, but there was nothing else to indicate that it was likely to take part in this vegetating growth. These products were firm and elastic, but not hard. They were tender on pressure, though they had given rise to little or no pain during their development, when let alone. They did not appear to be very vascular, and at no time in their history did they bleed or ulcerate, but they were constantly moistened by a thin, fetid secretion from the surface.



The great inconvenience and suffering arising from this condition was interference with the functions of the parts involved, and for this mainly she sought relief. Surgical interference was advised, and on Feb. 23, 1881, with the patient anæsthetized, I proceeded to operate, being assisted by Drs. W. A. Davis, Wm. D. Robinson, and John S. Mabon. My purpose was to amputate the mass at its different points of attachment by a sort of flap operation, and then to bring the edges together by suture, and thus aim to get immediate union. But when I had removed the nymphæ at their lower portions, and had advanced upwards towards the clitoris, so much hemorrhage was met with that it was considered more prudent to finish the operation with the aid of the écraseur, which was done. After the mass was separated no hemorrhage occurred, though there was left a raw surface along the whole length of each nympha about half an inch in width, and a much larger surface at their junction above. The edges of the wound were brought together, as originally intended, by sutures, about twelve of which were required. I did not now, however, expect to secure union by first intention, for two reasons: first, because of the use of the écraseur; and second, because the skin was so toneless that the ligature cut through in several instances, when effort was made to bring the edges together, although very little force was required to do so. The knees were fastened together, and a suppository containing one grain of the aqueous extract of opium placed in the rectum, which was all the opium administered in the after-treatment of the case.

The pedicle, as seen in the specimen, gives a very inadequate idea of the real surface left to heal, as it did not spread out when released from the loop of the écraseur, as did the parts from which it was taken.

The after-treatment consisted in antiseptic precautions, good food, and quinia in tonic doses. On the fourth day, it was found that the sutures had cut out, and that union had, as feared, failed to take place. The wound finally healed by granulation, and the patient recovered better health than she had enjoyed for years; and in five months after the operation she became again pregnant, the last pregnancy having occurred eleven years before.

My friend Dr. H. F. Formad, to whom I sent the tumour for microscopic examination, gave me the following report: "The specimen must be classed with the *polypoid fibromata*, known also under the name of *fibroma molluscum.* It is made up exclusively of connective tissue in all its parts, and is covered all around by a thin membrane which has the structure of skin (minus the secretory elements and hairs). It has nothing in common with *papilloma* or with *elephantiasis*, except in macroscopic appearance, and differs from the latter by being pedicellated and containing no yellow elastic tissue. Under the microscope, the absence of yellow elastic tissue forms one of the main diagnostic points of fibroma from elephantiasis."

The only cases that I have been able to find recorded which somewhat resemble this specimen in shape and character are, first, that given and pictured by Virchow in his book on tumours (*Die Krankenhaften Geschwülste*, vol. i. p. 421), and that by Dr. H. F. Formad (*Trans. Path. Society of Phila.*, 1880). But in both of these cases the tumours did not exceed in size a small hen's-egg, and they were attached to the labium minorum by only one narrow pedicle, whilst in my case the tumour was attached by many pedicles to both labia minora. In both cases the tumours differed histologically from this specimen in being of myxomatous structure, whereas in my case the tumour showed a purely fibrous structure.

Another class of tumours, which have a certain macroscopic resemblance to the new formation in question are described by Virchow, l. c. p. 345, and termed "*acuminated condylomata.*" These occasionally also occur in polypoid, dendritic form, but differ in being in the main bulk made up of epithelium.

Elephantiasis arabum, which sometimes gives rise to tuberosities, the surface appearance of which is not unlike that of this tumour, according to Virchow, never gives rise to pedicellated formations, but always involves an organ in toto.

ARTICLE XVIII.

ON THE VARIETIES, MECHANISM, DIAGNOSTIC SIGNIFICANCE, ETC. OF THE MITRAL PRESYSTOLIC CARDIAC MURMUR.

By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in the Bellevue Hospital Medical College.

MY object in this article is to give a brief statement of conclusions, based on my own clinical observations, in respect to the mitral direct or presystolic cardiac murmur, and the points which I shall make are embraced in the following propositions:—

1. There are two varieties of this murmur, which are distinguished by differences in quality and in mechanism. One variety is a rough, and the other is a soft murmur.

2. The roughness in the first of these varieties is characteristic, and may be distinguished as vibratory or blubbering. It is imitated very closely by producing with the expired breath sonorous vibrations of the lips or of the tongue. The softness of the second variety is bellows-like, resembling that of other soft cardiac murmurs. This murmur may vary in pitch and intensity, but as a rule, it is low and weak.

3. The rough murmur is due to vibrations of the curtains of the mitral valve, caused by the passage of blood from the auricle to the ventricle. Hence, the modes just mentioned, of imitating the murmur, exemplify its mechanism as well as its vibratory or blubbering character. The soft murmur, like other bellows murmurs, may be due either to contraction of the orifice through which the blood passes, or to roughness of the surface over which it flows.

4. A rough presystolic murmur, in general, denotes a mitral obstructive lesion, the obstruction due to adhesion of the mitral curtains, leaving a

contracted orifice, the curtains remaining flexible. A presystolic soft murmur denotes either a contracted orifice or roughness of the endocardial membrane.

5. A rough presystolic murmur, exceptionally, is produced when there is no mitral lesion, aortic regurgitation existing whenever the murmur is thus produced. The production of this murmur without mitral lesion may be explained by the physical conditions incident to aortic regurgitation, taken in connection with the mechanism of the murmur.

6. A rough mitral presystolic murmur is not always present in connection with contraction of the mitral orifice, and by reference to the physical conditions, together with the mechanism of the murmur, its absence in certain cases may be satisfactorily explained.

7. A soft mitral presystolic murmur is a very rare physical sign. A rough mitral presystolic murmur, on the other hand, is by no means rare, although less frequent in its occurrence than the mitral systolic, the aortic direct and the aortic regurgitant murmurs. The explanation of the supposed infrequency of the rough presystolic murmur is to be found in the fact that it is often confounded with the mitral systolic murmur.

8. Mitral lesion giving rise to presystolic murmur is sometimes tolerated for a much longer period than appears to be generally supposed.

The mitral presystolic murmur was first distinctly separated from other cardiac murmurs, and its diagnostic characters clearly pointed out, by Fauvel, in 1843.[1] He described the rough variety, applying to it the terms *bruit de râpe* and *enroué*, and established its connection with a mitral obstructive lesion. Markham and Walshe appear to have been the first in England to recognize this murmur, but its distinctive characteristics were subsequently more clearly set forth by Gairdner. Skoda, up to the time of the fourth edition of his work (1850), evidently had no definite idea of it.

I was led to seek for the murmur by the study of the work by Walshe on *Diseases of the Lungs and Heart*, edition of 1854. Walshe describes in that edition of his work only the soft murmur. At the time of the publication of the first edition of my work on *Diseases of the Heart* (1859), I had met with examples of the soft murmur. The rough murmur, I confounded, as I had done previously, with the mitral regurgitant murmur; hence, I stated that the mitral presystolic murmur was soft and extremely infrequent in its occurrence. In an article contained in the *American Journal of the Medical Sciences* for 1862, entitled the Cardiac Murmurs, I corrected the account of the mitral presystolic murmur as given in the first edition of my work on *Diseases of the Heart*. I had then recognized the common variety of this murmur, that is, the rough, vibratory or blubbering variety. Already many examples had come under my observation, and in illustration of its frequency, I stated in the article that while I was writing it there were six examples in Bellevue Hospital, and other examples in the Charity Hospital on Blackwell's Island. From 1858, when I began to give practical lessons in auscultation and percussion, up to the present time, I have been accustomed to demonstrate this murmur to medical classes, and it is not an exaggeration to say that many hundreds of examples have come under my observation during this period in hospital and private practice. Prior to my publications just referred to, so far as I know, no writer in this country had described this murmur. I believe that I may add that for many years after those publications it was recognized as a distinct murmur by very few of those who gave more or less attention to auscultation, and, indeed, at the present time, it is not so recognized by many.

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[1] Archives Générales de Médecine, 1843, *vide* Hayden on Diseases of the Heart and Aorta, 1875.

An essential condition, of course, for the acceptance of conclusions given in this article, is freedom from any suspicion of error in the clinical observations on which they are based. With a clear apprehension of the points involved in the diagnosis of the rough mitral presystolic murmur, and proper care of observation, there can be no liability to error. As already intimated, the murmur with which this is often confounded is the mitral systolic or regurgitant. The fact that this error is committed does not arise from any difficulty in the discrimination, but from the lack of either a clear apprehension of the distinctive points, or of proper care of observation. Both varieties of the presystolic murmur end when the mitral systolic murmur begins, that is, with the first sound of the heart. Now, the mitral systolic murmur is never heard before the first sound of the heart, and the mitral presystolic is never continued after this sound. Attention to this point alone is sufficient to prevent the latter from being confounded with the former. If, as is often the case, but by no means constantly, there be present both the mitral systolic and presystolic murmur, the combination assists in the recognition of the latter provided attention be given to the point just stated. The first sound, and, of course also, the apex beat and the carotid pulse, occur between the two murmurs, marking the end of the one and the beginning of the other. If the presystolic murmur be rough and the systolic be soft, this difference in quality shows the presence of the two murmurs. Other points distinctive of the rough presystolic murmur are its vibratory or blubbering character, and its being limited to a circumscribed space in the situation of the apex beat. It is rarely weak, and often notably loud. Its loudness has been considered as proof that it could not be produced by an auricular contraction; but it is not difficult to understand why it should be loud when the true mechanism is considered. Another point is that the intensity of the murmur increases up to its ending with the first sound of the heart. The suddenness of its ending is still another point. This is easily understood when it is considered that the auriculo-ventricular current of blood which gives rise to the murmur, is instantly and forcibly arrested by the ventricular systole.

There is an appreciable interval of time between the second sound of the heart and the presystolic murmur. By this fact the murmur may always be differentiated from an aortic regurgitant murmur. It is with the latter that a soft presystolic murmur may be confounded, if the differential points be not clearly apprehended. The limitation of the soft presystolic murmur to the region of the apex, and its absence at the base of the heart, are additional points which should prevent this error.

No other cardiac murmur has the same relations to the heart-sounds as those of the presystolic murmur, and rarely, if ever, has any other murmur that peculiar vibratory or blubbering quality which characterizes the rough presystolic murmur. Taking these facts, together with the other distinctive points, into consideration, I may assert with positiveness that, as regards the examples which have served as the basis of the conclusions given in this article, there could have been no error in the clinical observations. It may be said with truth that when its distinctive points have been fully understood and verified by examples, no one of the cardiac murmurs is more readily recognized than the mitral presystolic murmur. It will be observed that in the foregoing description there is no reference to the pitch and quality of the soft presystolic murmur. The characters, in these regards, are of no practical importance in the recognition of the murmur. It is to be discriminated from a mitral systolic murmur on the one hand, and an aortic regurgitant murmur on the other hand, by the differential points which have been stated, and these are sufficient for that purpose.

That the rough presystolic murmur is due to vibrations of the mitral curtains was stated in my article on the Cardiac Murmurs in 1862. I am not aware that this explanation of the mechanism had been given by any writer prior to that time, and it has neither been disproved nor adopted by subsequent medical writers. That it is the true explanation, as it seems to me, may be demonstratively shown. This would be of no great practical importance were it not that the explanation has a direct bearing on the diagnosis of the particular form of mitral lesion which it generally denotes.

The character of the rough murmur and the manner in which it may be imitated, as already stated, go to sustain my explanation of its mechanism. But conclusive proof is obtained by comparing the lesions, as found after death, when this murmur had been noted, with those in the cases (to be presently noticed) in which the murmur had been absent. With an exception, to be presently considered, there is mitral obstruction; but the obstruction is caused by adherence of the mitral curtains at their sides, forming what has been called the button-hole contraction, the curtains not much contracted nor made rigid by thickening or calcification. Under these circumstances the mitral curtains form a funnel-shaped pouch within the ventricular cavity. When this pouch is distended by a liquid injected into the auricle, it is apparent that the passage of the liquid through the button-hole orifice into the ventricle causes in the flexible curtains sonorous vibrations. The mechanism may be illustrated with a healthy heart, by stitching together the mitral curtains, leaving a contracted aperture, and injecting a liquid into the auricle. The curtains in this experiment may be seen to vibrate, and a sound is produced analogous to the rough presystolic murmur. This experiment was recently made, by my request and in my presence, by Dr. W. C. Stone, house physician of the medical division of Bellevue Hospital, with which I am connected. The explanation which has been given of the mechanism renders intelligible the peculiar character of the rough presystolic murmur. That the murmur may be notably loud, notwithstanding the weakness of the contraction of the auricle as compared with the force of the ventricular systole, is not strange when it is considered how loud may be the sound produced by vibrations of the tongue or the lips with a feeble current of air in expiration. The mechanism accounts for the apparent incongruity when, as is not infrequently the case, a feeble mitral systolic murmur is associated with a notably intense presystolic murmur.

It follows, from what has been stated, that on the presence of a rough presystolic murmur may be generally based the conclusion that there exists the so-called button-hole contraction of the mitral orifice, the mitral curtains not having lost their flexibility from either contraction, thickening, or calcification.

A well-marked, rough mitral presystolic murmur may be present, and not be due to any mitral lesion. I am not aware of this clinical fact having been stated by any other medical writer. It was stated in my article on the Cardiac Murmurs in 1862, and I have reiterated it in subsequent writings. In the article just referred to, I gave a synopsis of the history of two cases in which the presystolic murmur was noted during life, and no lesion at the mitral orifice sufficient to account for the murmur found after death. I have met with several instances since that time. In all there existed aortic lesions which occasioned free regurgitation. There could have been no error of observation in these cases, and hence the only matter of inquiry relates to the explanation. The explanation which I gave in 1862 seems to me satisfactory, and I cannot conceive of any other. It is based on the true mechanism of the murmur when connected with mitral lesions, and on certain physical conditions which are incident to aortic regurgitation. I quote, from my article in 1862, the explanation, as follows:—

"The explanation involves a point connected with the physiological action of the auriculo-ventricular valves. Experiments show that, when the ventricles are filled with a liquid, the valvular curtains are floated away from the inner ventricular walls, approximating to each other, and tending to closure of the auricular orifice. In fact, as first shown by Baumgarten and Hamerrich, of Germany, a forcible injection of liquid into the left ventricle through the auricular opening will cause complete closure of this opening by the coaptation of the mitral curtains, so that these authors contend that the natural closing of the auriculo-ventricular orifices is effected, not by the contraction of the ventricles, but by the forcible current of blood propelled into the ventricles by the auricles. However this may be, that the mitral curtains are floated out and brought into apposition to each other by simply distending the ventricular cavity with liquid, is a fact sufficiently established and easily verified. Now, in cases of considerable aortic insufficiency, the left ventricle is rapidly filled with blood flowing back from the aorta, as well as from the auricle, before the auricular contraction takes place. The distension of the ventricle is such that the mitral curtains are brought into coaptation, and, when the auricle contracts, the current of blood through the auriculo-ventricular orifice passing between the curtains throws them into vibration, and gives rise to the characteristic blubbering murmur. The physical condition is in effect analogous to contraction of the mitral orifice from an adhesion of the curtains at their sides, the latter condition, as clinical observation abundantly proves, giving rise to a mitral presystolic murmur of a similar character. A mitral presystolic murmur thus may occur without any mitral lesions, provided there be aortic lesions involving considerable aortic regurgitation. This murmur by no means accompanies aortic regurgitation as a rule. The circumstances which are required to develop the presystolic murmur, in addition to the aortic regurgitation, remains to be ascertained. Probably enlargement of the left ventricle is one condition. The practical conclusion is that a presystolic murmur, in a case presenting an aortic regurgitant murmur with cardiac enlargement, is not positive proof of the existence of mitral lesion."

It is to be added that, in cases presenting a mitral presystolic murmur without mitral lesion, the murmur is variable as regards its presence and absence. This is to be regarded as a diagnostic point.

Hayden objects to the foregoing explanation of the presystolic murmur occurring without mitral lesion, on the ground that, if this explanation were the correct one, the murmur should be present in the "normal state of the chambers and valves." In this objection he overlooks the fact that in the normal state, although the valvular curtains are approximated at the time when the auricle contracts, they are not in coaptation as they are when, in addition to the passive flow of blood from the auricle prior to the auricular contraction, the ventricle has received the backward flow of blood from the aorta. The production of the murmur probably requires that the quantity of blood in the ventricle shall be sufficient to have produced closure of the orifice at the time when the auricle contracts. A stronger objection than that stated by Hayden, is the infrequency of the murmur in so many cases of aortic regurgitation.

It is by no means true that a rough mitral presystolic murmur is present whenever an obstructive mitral lesion exists. A mitral obstructive lesion may be found after death, when a mitral presystolic murmur had not been produced. This fact in no wise militates against the significance of the murmur when it is present. It is, however, an important fact as leading to the conclusion that we cannot exclude a mitral obstructive lesion because the murmur is absent. The fact is a point in evidence of the correctness of the explanation which has been given of the mitral presystolic murmur. When the murmur is absent, mitral obstruction existing, the latter is due to contracted, thickened, or calcified valves. The curtains are incapable of vibrations sufficient to produce the murmur. Under these circumstances, there may or may not be a soft presystolic murmur. Clinical observation shows, as stated already, that this variety is extremely rare, and therefore its absence is no evidence of the absence of mitral obstruction.

The following case which came recently under my observation, at Bellevue Hospital, serves to illustrate the fact that much mitral obstruction may exist without a presystolic murmur, and also the explanation of this fact :—

The patient entered hospital with anasarca and notable dyspnœa. There was ascites out of proportion to the general dropsy. He had a loud, rough systolic murmur at the apex, transmitted to the left, and heard at the lower angle of the scapula. There was no mitral presystolic murmur. He had a systolic murmur at the base and transmitted to the carotids. The heart was considerably enlarged, and the signs denoted that hypertrophy predominated. The autopsy showed peritonitis, which was the immediate cause of death, hypertrophic enlargement of the heart, and universal old pericardial adhesions. The mitral orifice was diminished so as hardly to admit the end of the little finger. The mitral curtains were contracted and completely rigid from calcification. The orifice from the auricular aspect was smooth.

In this case the physical conditions were such that a rough presystolic murmur was impossible. Accepting the explanation which I have given of the mechanism, it might be supposed that the conditions were favourable for the production of a soft presystolic murmur, but it is to be considered that this variety is very rarely present in cases of mitral obstruction. Probably its infrequency is to be explained by the weakness of the contraction of the auricle as compared with the ventricular contraction. When present, according to this explanation, it denotes either unusual force of the auriculo-ventricular blood current, due to hypertrophy of the muscular elements in the auricle, or to physical conditions, pertaining to the contracted orifice, which are peculiarly favourable for the production of sonorous vibrations of the current.

A rough presystolic murmur may represent a degree of mitral obstruction which is tolerated for many years. As illustrations, I will refer to a few cases.

A patient whom I see occasionally came under my observation about twelve years ago, after her confinement. She had much anasarca, with large pleuritic effusion in both sides, and orthopnœa. She was speedily relieved, and during much of the time which has since elapsed, she has had comfortable health; she has repeatedly had more or less anasarca, which has yielded to digitalis and a saline diuretic. A loud presystolic murmur has existed during this period. Probably the mitral lesion had existed for years before she came under my observation.

In another case the patient, a young girl, came under my observation fifteen years ago. She had then, and has always had since, a loud mitral presystolic murmur. The heart is but slightly enlarged, and the mitral lesion occasions inconvenience only on very active exercise. She has not had anasarca nor œdema, and there have not been any symptoms pertaining to the heart which have called for treatment.

In another case the patient was under my observation for more than ten years. The previous history showed that there had existed a cardiac affection for several years. There was a loud presystolic murmur. The affection was well tolerated up to a few months before her death. In this case, shortly after the occurrence of œdema of the lower limbs and dyspnœa, the presystolic murmur at times was not discoverable. This is probably to be explained by the weakness of the auricular contractions, and, under such circumstances, so far from its disappearance being of good omen, the reverse is true.

To these cases I could add others illustrative of the long tolerance of a mitral obstructive lesion. The existence of mitral obstruction with but little or no mitral regurgitation, and the absence of aortic lesions, conduce to the toleration.

ARTICLE XIX.

A CASE OF CÆSAREAN SECTION. BY GEORGE McCLELLAN, M.D., Surgeon to the Philadelphia Hospital, etc.

DURING the summer of 1881, I was unexpectedly called upon to perform Cæsarean section at Bar Harbour, Maine, on an Indian woman, in a poor little canvas tent, by lamplight. It was on the evening of August 20th, at half past ten o'clock, in the presence of Dr. Keating, Dr. Amory, Dr. Rogers, and Dr. Chilcothe. The woman, whose name was Susan Antoine, aged 38, was the mother of seven other children. She had always had difficult labours, but was only attended by a midwife, who was a member of the tribe to which she belonged. She was one of the Canadian Indian basket-makers, who encamp on the island of Mt. Desert during the summer season. She had been in labour forty-eight hours. The physician who first saw her said he had "applied the forceps and attempted version;" but not succeeding in delivering the child he called in Dr. Robert Amory, of Boston, who found a foot presenting in the vagina, but could not determine satisfactorily the position of the child. After several hours of traction on the foot, without changing the condition, I was sent for, and wishing to have the advice and experience of Dr. William V. Keating, who happened to be in the neighbourhood, I asked him to see the case also. As his opinion of the woman's condition, from a gynæcological point of view, is very valuable, I will add, after giving my own account of the operation, a note which he has sent me expressing his views of the case.

When we first saw the patient together, the cervix uteri was completely dilated, and the contractions were very strong. The *right* foot was found at the upper portion of the vagina with its heel directed backwards and to the right side. It was conjectured that the head, with an arm and leg, was engaged in the superior strait. The patient was put completely under the influence of chloroform, and traction was made upon the protruding foot, but without avail, although a fillet was applied, and great force used.. No change could be made in the position of the child, either by efforts from within, or applied from without over the abdominal walls. Dr. Keating pronounced that the fœtal heart had stopped, and that the presentation was a complicated one, resembling the fourth position of the vertex described by Hodge. After repeated and ineffectual attempts to dislodge the head of the child and to bring down both feet, it was decided that Cæsarean section was the only means of saving the woman's life, as craniotomy was not thought practicable under the circumstances. It was, however, agreed to give a hypodermic injection of $\frac{1}{2}$ grain of sulphate of morphia, and to wait a couple of hours to see if nature's efforts would bring about any change. Upon returning, we found the presentation just as before, and it was decided that it was useless to delay the operation.

The patient was etherized by Dr. Chilcothe. On a rude table covered with an old mattress and deer hides, and with only the light of two oil lamps, I began the operation. I first cut through the integuments and fat in the linea alba, from the umbilicus to the symphysis pubis, making one free incision; I then carefully laid open layer upon layer of fascia upon a grooved director, and after dividing the abdominal muscles, which were greatly wasted, opened the peritoneum (cutting sideways, as in opening the sac of a hernia), pushed aside the omentum and intestines, and immediately opened the uterus, coming at once upon the child.

The appearance of the distended uterus was very different from what I expected. It was glistening, and looked like elastic fibrous tissue, and the venous sinuses were not at all marked. The situation of the placenta was conjectured to be on the left side and back, and a bold incision was made into the uterus at a point corresponding to about two inches above the pubic symphysis. At first I was startled by a flow of what looked like fecal matter from the bowel, and for the instant was vexed that I had discarded the grooved director, but feeling assured that the uterus must be before me, I enlarged the incision, and at once discovered that I was in contact with the child, and that it was the meconium which had embarrassed me. Perhaps the bad light which I had to see by (for the lamp was held by an assistant whose eagerness to witness the procedure more than once cast a shadow over the wound) caused the momentary doubt; but I believe it was shared by all who were with me.

The walls of the uterus were very thin, and readily yielded to my finger. The child was immediately seized, and with Dr. Keating's assistance carefully, although with great difficulty, extracted. It was found to be very large, with an enormous head, which, with an arm and the left leg, was firmly wedged at the right sacro-iliac symphysis. The placenta offered no resistance, and was speedily detached. Carbolized sponges were used during the operation, and to mop out the effusion into the pelvis. As the womb contracted promptly, I did not put in any stitches, and without delay proceeded to unite the edges of the abdominal wound, taking deep stitches with strong silver wire through the several layers, including the peritoneum. A carbolized flannel bandage was applied. I did not have to apply a single ligature. The operation took about half an hour. The patient had had a subcutaneous injection of ½ grain of morphia two hours before the operation, and this was repeated immediately afterwards. Pulse remained good during the operation, and for some time into the night the patient slept peacefully. At eight o'clock next morning, she was restless, and complained to me of being hungry; wanted "beefsteak," and to "sit up;" no vomiting. Temperature normal; pulse 90. Ordered her kept quiet, and a little milk and lime-water to be given occasionally. No after-pains; womb firmly contracted; very little tympanites; wound looked very well, and discharges were natural. Flannel bandage (carbolized) reapplied. At 11½ A. M., the doctors met me in consultation. The pulse was found to be 120; temp. 102°. Patient very restless. Wound looked well, and as before. It was afterwards ascertained that some one of her companions had given her during the interval of my visits over a pint of gin, believing that she would starve upon milk and lime-water, and *gin* being to the Indian a panacea for all ills. She asked Dr. Keating to give her some more "gin," and said she was hungry. Morphia was repeated, and a trained nurse obtained to watch her. During the day she complained of hunger more than thirst, and continued to be restless. Took eagerly all that was given her. She had no vomiting. Pulse ran up higher and higher, and the temperature kept pace with it. She was enormously fat, and was oppressed in the position on her back, and wished to turn over on the side. This was, of course, denied; but, being strong, as well as strong-willed, she got the better of the nurse, and turned over on the right side. The oozing was slightly increased, but the wound showed no tendency to gap, and there was no indication of hemorrhage. Pulse 130, and temp. 103°. At 5 P. M., she took milk greedily; voice strong. She said she had no pain, and the wound looked very well; countenance was bad. The morphia was continued to quiet restlessness. The heart was weak from the first, and there was every indication of fatty degeneration. At 9 P. M., after asking for water in a strong voice, and without any symptom of immediate dissolution, she died. No post-mortem could be obtained.

The child weighed over 15 lbs. The biparietal diameter was 4¼ inches. The circumference of the head measured 12½ inches. It had the appearance of a four months' old baby.

I have received the following statement from Dr. Keating in reference to the case:—

In reply to your favour of 11th ult., I would state that when called in consultation upon the case of Susan Antoine, who had then, as I was informed, been in active labour for nearly forty-eight hours, I found the head engaged in the superior strait presenting vertex to the right sacro-iliac symphysis, fourth position of vertex, according to Hodge, an arm, and I thought the left foot engaged with the head; the right leg was protruding. The forceps and version by the feet had been repeatedly tried previous to my visit. The patient's pulse was rapid, and the heart, a fatty one, very weak. I requested that the patient should be thoroughly anæsthetized, and whilst in that condition I then endeavoured by traction on the right leg, combined with external manipulation over the abdomen, to bring down the breech. After repeated attempts, finding nothing could be accomplished, we decided to administer ½ grain sulph. morphia hypodermically, and wait for two hours for the efforts of nature. Returning at 9 P. M., we found the patient in the active throes of labour, with no change in the presentation. After renewed useless efforts to effect version, and finding nothing could be accomplished, we held a consultation as to our next proceeding. The condition of the uterus and surrounding pelvic tissues was the most unfavourable I have ever met with. The protracted active throes of labour, the continued applications of the forceps, and the repeated attempts to effect version, had produced such a tumefaction of the tissues, that it was with much difficulty, at my last visit, that I could identify a cephalic presentation. Moreover, the anterior lip of the uterus projected in a slinglike condition under the symphysis pubis, so suggillated and tumefied that it might have been mistaken for the placenta, almost occluding the os uteri. Upon my first visit, I had diagnosed from the condition of the fœtal cord, which was jammed in the presentation, the death of the fœtus, which was confirmed by all of us in a subsequent auscultation of the heart; no pulsation being audible. Our consultation then did not include the question of preserving the fœtus; it simply resolved itself, as to the selection of the means which, under the circumstances, would afford the most speedy delivery with the least risk to the mother. Viewing the conditions of the presentation, occipito-posterior, with an arm and foot jammed in, the intense tumefaction of the tissues in the pelvis, the enormous suggillation of the anterior lip of the uterus, almost occluding the os uteri, the character of the instruments at hand to perform craniotomy, and our adverse surroundings, Cæsarean section was immediately decided upon, as affording the poor sufferer the safest and speediest means of recovery. The more recent successful results from this operation, with the advantages for a speedy recovery to be expected from the remarkably pure and genial climate of Bar Harbour, compelled us to the above conclusion. The subsequent delivery convinced us of the correctness of our decision, as the head was found presenting in the fourth vertex position, with an arm and foot included, and the condition of the soft parts such as to have positively impeded the proper introduction of the instruments required for the successful performance of craniotomy, with the subsequent delivery of the fœtal head. You will readily recall to mind the length of time and the powerful efforts required to remove the head from the pelvis after the operation. I think I but echo the sentiments of my respected colleagues, in stating that the operation was entirely successful, even under the inauspicious circumstances under which it was performed. On the following morning the poor sufferer's condition was as favourable as possible, as to pulse, temperature, and condition of the wound. I am convinced that the fatal issue was mainly due to the excessive amount of stimuli given in our absence, her fatal symptoms all pointing to an exhausted heart.

Article XX.

Case of Mastoid Abscess which Ruptured into the Lateral Sinus. Death from Pyæmia.

By D. W. Prentiss, A.M., M.D., Professor of Materia Medica and Therapeutics in the National Medical College, Washington, D. C.

Chas. H., aged 31 years, upholsterer; father and one brother died of consumption. One sister has cancer. Has always been a strong, hard-working man; has had a chronic inflammation of the middle ear, frequently causing intense pain, and a purulent discharge from the ear. In the spring of 1881 he had a violent pharyngitis accompanied by severe pain in the right side of the head. Had at various times been under medical treatment for the ear trouble—the last occasion being in the hands of an irregular specialist.

During the early part of November, 1881, suffered from earache and headache on the right side, but continued working until Nov. 10th.

Nov. 11th. Chill at 11 P. M., followed by high fever.

12th. Chill at 4 A. M. Fever and sweat. A physician was called in who ordered quinia in full doses.

13th. Chill at 5 A. M.

14th. No chill. Violent earache right side.

15th (*5th day*). Chill at 1 P. M. Fever and earache.

First saw the patient at 2 P. M. Pain in right side of head intense, extending more to the frontal and temporal region than behind the ear.

The following is a brief summary of the daily record of the case:—

From 5th to 10th day no chill.

10th day. Pulse 144 during chill. Dextro-quinine 2.00 grams.

11th day. Dextro-quinine 2.00 grams.

12th day. Quin. sulph. 2.00 grams. Chill at 5 P. M. Morph. sulph. 2 millegrams at night.

13th day. Quin. sul. 1.30 grams. Severe chill.

14th day. Quin. sul. 1.30. No chill.

15th day. Quin. sul. 2.00. No chill.

16th day. Quin. sul. 2.00. No chill.

17th day. Quin. sul. 2.99. No chill.

18th day. Quin. sul. 1.30. No chill.

19th day. Morphia at bedtime. Quin. sul. 1.30. No chill.

20th day. Quin. sul. 1.30.

21st day. Chill at 5 A. M. Sweating profusely at 10.30 A. M.

22d day. Chill. Fever and profuse sweating. Stop quinia. Ordered digitalis and whiskey.

23d day. Sweating profusely. Cough begins to be troublesome. Muco-purulent expectoration, stained with blood.

24th day. Chills at 11.30 A. M. and 3 P. M.

25th day. Chills at 2.30 A. M. and 5 A. M.

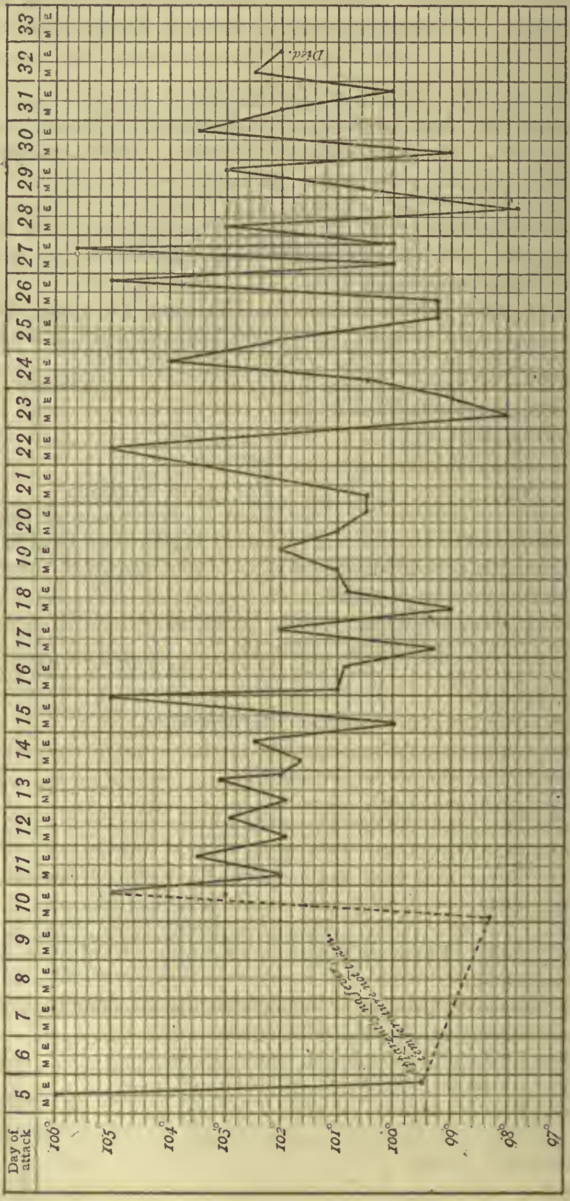
26th day. Profuse sweats. Chills 7.30 and at 9 P. M. Delirious.

27th day. Urine examined, quantity large. No albumen. Sp. gr. 1010. Chill at 1 P. M.

28th day. Chill at 7 A. M. Quin. sul. 2.00 grams. Poultice over liver.

29th day. Liver somewhat enlarged. Fluctuation thought to be detected in the liver.

30th day. Liver aspirated. No pus found. Aspirator introduced between 8th and 9th rib at a point about two inches posterior to the lateral line. Urine contains large amount of bile. Respiration 48.



Temperature chart of Charles H.

Autopsy, sixteen hours after death, made by Dr. N. Acker, assisted by Mr. Munson. Present, Drs. Busey, Thompson, C. E. Hagner, Evans, and Prentiss. Rigor mortis well marked. No peritonitis. No fluid in the cavity of abdomen. Spleen about three times its normal size, congested, pulpy, and dotted over with small infarctions.

Kidneys.—Left kidney one and a half times natural size—pale, showing fatty or amyloid (?) degeneration; capsule easily detached; cortical substance thickened. Condition of right kidney the same. In both were found pyemic infarctions.

Liver.—Slightly enlarged, but normal. Adherent to diaphragm posteriorly. Several spots resembling tubercles, but found under the microscope to be infarctions. Gall-bladder distended with bile. No abscess.

Heart.—Normal.

Lungs.—Left lung: about 12 oz. of serous fluid in the pleural cavity, recent adhesions between the pleura and diaphragm; a small pus cavity, size of a hazel-nut, at the apex, and a number of smaller abscesses (infarctions) in different portions of the lung. Lung congested and œdematous. Right lung: about 7 oz. serous fluid in the pleural cavity; hypostatic congestion of lower lobe—many small infarctions—especially towards the periphery.

Brain.—Membranes normal. Cerebrum and cerebellum normal, except a small abscess, one centimetre in diameter, in the anterior lobe of the left hemisphere of the cerebrum, just at the border of the white substance. The ventricles of the brain were found healthy. The dura mater covering the petrous portion of the right temporal bone was darkly discoloured. On removal the bone beneath was found carious, and an abscess disclosed, which communicated by a free opening with the lateral sinus. The sinus was filled with pus and clotted blood.

Microscopical Examination, by Dr. N. Acker. *Lungs.*—Centre of infarctus was composed of broken-down lung tissue and leucocytes; the surrounding lung tissue being in a state of catarrhal pneumonia. *Kidneys.* Tubular epithelium swollen and granular; some of the Malpighian corpuscles atrophied. *Liver.* In centre of infarctus were found leucocytes and liver cells in state of fatty degeneration; also a few cholesterine crystals. The surrounding liver tissue was congested, and the cells somewhat swollen and granular. *Brain.* The débris in centre of infarctus was composed of leucocytes and cholesterine crystals. The tissue for some distance around the infarctus was pale and devoid of blood, the vessel not containing a single blood corpuscle. Numerous cholesterine crystals were also found in the substance of the brain. An inflamed artery was found about an inch below the infarctus; beyond this the vessels were empty.

This case was closely watched, and studied with interest by the physicians in attendance; namely, in addition to myself, Drs. W. W. Johnston, S. C. Busey, and J. Ford Thompson. The exact diagnosis was not clear from the beginning, and was still doubtful when the man died. It was evident that suppuration was going on somewhere, and that poisoning of the blood had resulted; but just where the diseased process was located was not determined until the autopsy.

The chills were irregular in their return, were very violent in character, the extremities becoming cold and blue, and the face pinched and dark—*congestive chills*, in fact—and the fever following was very high, 105°, 105.5°, and 106°, in spite of 2.00 gm. doses of quinia. They were not controlled by quinia, although on two occasions they appeared to be held off for several days.

During the first ten days there was violent pain in the right side of the head, especially in the temporal region and over the eye, but there was no swelling or soreness about the mastoid portion of the temporal bone. There was a moderate discharge of thin, purulent matter from the ear. These symptoms, taken in connection with the previous history, led to the suspicion that there was an abscess of the mastoid cells, which had ruptured internally in the cranium. But they entirely disappeared after about ten days, when hepatic and pulmonary symptoms took their place. Cough became troublesome, with free muco-purulent expectoration tinged with blood. The liver appeared to be enlarging, jaundice developed, and finally the urine became loaded with bile. Thus special attention was directed to the liver, and the existence of abscess was considered probable. It was aspirated December 10, three days before death, without result.

The autopsy disclosed greatly enlarged spleen, large anæmic kidneys, œdematous lungs, with hypostatic congestion, pleuritis, and slightly enlarged liver, with pyæmic infarctions in the several organs, but did not show the source of infection until the cranium was opened. A dissection of the right temporal bone showed that the pus had been poured directly into the circulation through the lateral sinus.

In the light of the autopsy, it would seem that there should have been no hesitation in making a diagnosis, as, indeed, there would not have been had not the local ear symptom entirely disappeared, and the secondary results of the blood infection drawn attention to other organs.

The hepatic symptoms were so marked that they justified the belief that abscess of the liver existed. That organ was aspirated, not with any hope of curing the patient, but to give temporary relief, and aid the diagnosis.

The most important practical point suggested by this case, is the question as to whether proper surgical treatment of the ear-disease at some time prior to the occurrence of the last illness, would not have averted the fatal blood infection. After the occurrence of the chills, it was, of course, too late to have operated on the mastoid cells with any benefit. But if the mastoid had been trephined, and a free outlet had been given to the unhealthy secretions, *before* the bones became so diseased as to allow a vent inwards, the sequel, in all probability, would have been averted. The man had previously been under the care of an irregular practitioner for the ear trouble.

Another point of interest was the existence of an abscess in the anterior portion of the left cerebrum, without producing any symptoms whatever during life. Had such symptoms occurred they would not have been overlooked, for the patient was carefully watched for indications of cerebral disease, because intracranial abscess was suspected. There was no paralysis of either motion or sensation; no aphasia, and no delirium until exhaustion set in.

ARTICLE XXI.

WHAT CONSTITUTES INSUFFICIENCY OF THE INTERNAL RECTI MUSCLES?

BY SAMUEL THEOBALD, M.D., OF BALTIMORE.[1]

DURING several years a conviction has been gradually developing in my mind that I did not know what constitutes insufficiency of the internal recti muscles, or, at least, that I did not know where the line between sufficiency and insufficiency should be drawn. When, in seeking to account for the existence of asthenopia, I discovered by the usual means a considerable degree of hypermetropia or of astigmatism, I felt that I had found something which was definite and real, and I had little doubt that the correction of this defect would be followed in due time by the disappearance of the asthenopic symptoms; but, on the other hand, when, failing other causes, I was led to examine the state of the muscles of convergence, and by means of the tests usually relied upon, discovered, according to the accepted standards, insufficiency of these muscles, I felt that I was dealing with something which was far less definite, and I could not escape the suspicion that the therapeutic measures which this discovery prompted me to take were, perhaps not unfrequently, directed against an evil which had only an imaginary existence.

So far as I can account for this state of mind, it was due, first, to the fact that I seldom sought for insufficiency of the internal recti muscles without finding it, unless hypermetropia existed; secondly, to the frequency with which I observed the disappearance of asthenopic symptoms without any diminution in the apparent insufficiency of the muscles; and, thirdly, to the contradictory character of the results which I obtained in many cases from the different tests upon which we are taught to rely to determine the existence and to measure the amount of this anomaly.

The important influence which errors of refraction exert upon the behaviour of the muscles of convergence; the necessity of correcting such errors or of allowing for their influence, in applying the tests for insufficiency; and the propriety of distinguishing between real insufficiency or weakness of the internal recti-muscles and the apparent insufficiency which is so commonly associated with myopia, and which is due to disturbance of the normal relation between accommodation and convergence, were forcibly impressed upon my mind some years ago, through a study of the behaviour of my own myopically formed eyes, and in a paper entitled "An endeavour to show that insufficiency of the internal recti muscles and myopia have been erroneously associated; and that the muscular asthenopia of myopia is not the result of such insufficiency, but of the anomaly of refraction," published in the *Am. Journal of the Med.*

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[1] Read before the American Ophthalmological Society at its annual meeting in Newport, R. I., July, 1881.

Sciences, in January, 1874, I dwelt at some length upon these points. At that time I argued that the Graefe tests for insufficiency of the internal recti muscles, though trustworthy when applied to emmetropic eyes, are calculated to give deceptive results in ametropia, because of the disturbance of the normal parallelism between accommodation and convergence, unless as preliminary to their application the precaution is taken to correct the error of refraction. That, owing to the disposition which ametropic eyes always exhibit to restore this normal parallelism, an effort to do so is made so soon as the production of vertical diplopia annuls the still stronger desire for single vision, and that as a result of this the vertical prism tests show "in hypermetropia, an excess of power in the internal recti muscles which is not real," and, "in myopia, an insufficiency which is only apparent," being merely the expression of "the ever present, but for the moment unrestrained desire, to exact as little work of the internal recti as is at the same time required of the ciliary muscles." In support of this view I mentioned that an apparent insufficiency of 12°, which my own eyes, with $M\frac{1}{16}$, exhibited at 8″, disappeared entirely with total correction of the myopia, diminished with partial correction, and was increased by convex glasses; and, further, that when the experiment was tried of placing before one eye a convex glass, and before the other a concave glass, which more than neutralized the myopia, so that objects could not be seen distinctly at the same time with both eyes, the images of the dot in the vertical diplopia test changed their positions in such a manner, as to indicate excess of power in the internal recti when the dot was seen distinctly with the over-corrected eye, with strained accommodation, and marked insufficiency when looked at, with relaxed accommodation, with the eye before which the convex glass was placed.

Two other possible sources of error in Von Graefe's dot and prism test, which were detected during my experiments, were also pointed out, and a means of getting rid of them suggested. The relation between accommodation and convergence being so intimate, it becomes important that during the examination the eyes should be accurately accommodated for the distance at which the test object is held. Now the round dot of the Graefe test, since it remains a round dot, and is seen almost as distinctly whether brought exactly to a focus upon the retina or not, does not offer a sufficient incentive to accurate accommodation, and is, therefore, ill-adapted to the purpose for which it is employed. For this reason the substitution of a star for the dot was proposed—a cross, which otherwise might have answered still better, being discarded because of the confusion to which it would be likely to give rise should astigmatism happen to be present. The other source of error lies in the undue length of the vertical, bisecting line. The two images of this line overlap; and this was found in a measure to annul the influence of the vertical diplopia, an involuntary inclination to blend the overlapping portions of the images being felt.

The omission of the line, therefore, since it is not an essential part of the test, was recommended.[1]

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[1] An interesting and instructive article by Dr. E. G. Loring upon "Tests for the Insufficiency of the Recti Interni Muscles," which appears in the Transactions of this Society for 1868, has been brought to my notice, since the preparation of this paper was begun, by my friend Dr. Russell Murdoch. In this article Dr. Loring discusses the trustworthiness of the several tests proposed by Von Graefe, and especially considers *whether the vertical diplopia tests do away with all voluntary control over the muscles of convergence*, and *whether the prism which reduces crossed images to the same vertical line expresses the whole amount of the insufficiency of the interni.* His conclusions upon these two points are, that the production of vertical diplopia does not always prevent such control, and that the prism which reduces the images to the same vertical line, in some instances, indicates only a part of the total insufficiency. In support of the former conclusion, he mentions a case in which a patient during the application of the test was able to produce at will either crossed or homonymous images in both near and distant vision, and cites his own ability to do this with the test card at twelve inches. This faculty of changing the position of the images is, I think, due rather to voluntary control of the accommodation than to direct command over the internal recti muscles, the alteration in the direction of the visual lines being brought about by increasing at one moment and diminishing at another the tension of accommodation; at all events the ability to control the position of the images, without a corresponding change of accommodation, must be of extremely rare occurrence. We have it in our power, therefore, to prevent this perplexing accident, by insisting that the test object be accurately accommodated for; and this the change in the form of the object which I have proposed renders more easy of accomplishment.

The second conclusion is sustained by reference to cases which he had frequently met with, in which "after we have brought the images from being crossed into the same vertical line, we can go on adding prisms, sometimes those of considerable degree, and yet the images remain exactly over each other, instead of becoming homonymous." The explanation offered of this occurrence, that it is due to the existence of *latent* insufficiency, comparable to latent hypermetropia, does not seem to me very satisfactory. In the first place, latent insufficiency to be comparable to latent hypermetropia should be insufficiency which cannot be immediately rendered manifest by glasses, whereas the insufficiency which Dr. Loring describes as latent, expressed by the difference between the weakest prism which causes the images to stand in a vertical line, and the strongest which does not induce homonymous separation, is brought out at once by this means. Furthermore, how does this explanation help us to comprehend the singular circumstance, that with each increase in the strength of the prisms the latent insufficiency is brought out, or the internal recti muscles yield, to exactly such an amount as to keep the images directly one above the other? In hypermetropia, exactly a forty-eighth, next a forty-second, and then a thirty-sixth is rendered manifest by the application of glasses, because the ciliary muscle is prompted each time to yield to just that extent to accomplish a definite purpose—the maintenance of distinct vision; but why should the internal recti muscles, with apparently no definite purpose to be served by keeping the images in the same vertical line, yield in the regular manner described? Dr. Loring's suggestion of latent insufficiency certainly affords no explanation of this. The true explanation, it seems to me, is to be found in quite a different direction—in the overlapping of the images of the unduly long bisecting line of the test, to which I have referred as a possible source of error, and the obviation of which I have proposed because of the likelihood of its giving rise to just such confusing results. Suppose in a case of insufficiency of considerable degree this inclination to fuse the overlapping portions of the lines, exists, the images being widely separated this disposition would probably remain in abeyance, but so soon as they were brought somewhat nearer together, by a

Though these several sources of error in the determination of insufficiency of the internal recti muscles attracted my attention early, and though subsequently they were kept constantly in mind, and in practice were guarded against by the adoption of the precautionary measures to which I have referred,[1] a feeling of uncertainty as to the trustworthiness of the results which I obtained in dealing with this condition has, as I have said, with the increasing experience of the last few years forced itself, more and more, upon me. The disappearance of asthenopic symptoms in certain cases, without any diminution in the insufficiency of the internal recti muscles, upon which they were supposed to depend, and the existence of which had been demonstrated by the usual tests, especially suggested the inquiry, *whether, even in emmetropia and with accommodation properly regulated, a considerable relative divergence of the visual lines might not occur in connection with vertical diplopia, and still no insufficiency of the internal recti muscles be present*, or, if this be interpreted as proof of insufficiency, whether this so-called insufficiency might not exist to a marked degree, and the eyes be none the worse for it.

In order to determine whether or not this was the case, I concluded to examine with especial reference to this point a number of strong-eyed, non-asthenopic individuals; and in selecting suitable subjects for this purpose, to make the experiment more decisive, I chose only those whose occupations led to frequent use of the eyes in near vision. My examinations were not confined to emmetropic eyes, but whenever errors of

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prism representing perhaps only one-half of the true insufficiency, they would be fused by an unconscious effort. Now it is evident that with each increase in the strength of the prisms, until the one was reached which truly represented the insufficiency, the fusion of the lines would be rendered easier of accomplishment, and that after this point had been passed, the prisms might be progressively increased for some time before this tendency would be again annulled by a too wide *homonymous* separation of the images. In this persistent blending of the overlapping images of the line, it is evident, is implied exactly such exceptional behaviour of the interni with prisms of different strength as Dr. Loring describes; and which exceptional behaviour I may add, in confirmation of this view, I have never observed with the test modified as I have proposed. While, therefore, endorsing much that is contained in Dr. Loring's article, especially what is said concerning the influence of errors of refraction in modifying the results of the Graefe tests, I am compelled to differ with him as to the significance of these two observations, to which he especially directs attention.

[1] During the discussion which followed the reading of this paper Dr. R. H. Derby, formerly a pupil of Von Graefe, stated that in 1869 Von Graefe, himself, had modified his original vertical diplopia test for insufficiency in almost the identical manner which I afterwards suggested (in my paper in the *Am. Journal Med. Sciences* in 1874), and for reasons almost precisely the same, and that he had described these modifications in an article in the *Klinische Monatsblätter für Augenheilkunde*, in 1869. It would seem that the suggestions contained in this paper of Von Graefe, referred to by Dr. Derby, have attracted comparatively little attention, at least they are not alluded to in any textbook upon diseases of the eye with which I am familiar; even Soelberg Wells, Von Graefe's pupil and disciple, does not mention them, but describes only the original test. Dr. Derby's mention of them at Newport, last summer, first brought them to my notice.

No.	Sex	Age	Re-fraction.	Vis-ion.	Result of Cover Test at 12″.	RESULTS OF PRISM TESTS.												REMARKS.
						At 12″.						At 20′.						
									With error of refraction corrected.						With error of refraction corrected.			
						Insuf. intern. recti.	Insuf. extern. recti.	Intern. recti over-come.	Insuf. intern. recti.	Insuf. extern. recti.	Intern. recti over-come.	Insuf. intern. recti.	Insuf. extern. recti.	Intern. recti over-come.	Insuf. intern. recti.	Insuf. extern. recti.	Intern. recti over-come.	
1	F.	31	Hm. $\frac{1}{60}$	$\frac{20}{xx}$	No perceptible movem't.	3°	....	14°	4°	....	11°	0°	...	10°	1°	....	8°	Has strong eyes. Reads and sews a great deal, and has never worn glasses.
2	F.	11	Hm. $\frac{1}{48}$	$\frac{20}{xx}$	No perceptible movem't.	2	....	34	3	....	28	0	....	25	0	....	18	Never complains of eyes; goes to school; does not wear glasses.
3	F.	23	Hm. $\frac{1}{48}$	$\frac{20}{xx}$	Not tried.	6	....	46	7	....	....	0	....	18	0	....	....	Eyes "very strong." Reads and sews a great deal, and has never worn glasses.
4	F.	24	M. $\frac{1}{10}$	$\frac{20}{xxx}$	Marked diverg. with m. corrected no mov't.	22	....	70	2	....	....	2	....	49	0	....	....	Wears glasses irregularly, for distance only. Eyes never troublesome, though she reads and does fine needlework.
5	F.	12	M. $\frac{1}{24}$	$\frac{20}{xx}$	No perceptible movem't.	2–3	....	34	....	1°	38	0	....	11	1	Less than 1°	16	School girl. Eyes strong. Does not wear glasses.
6	F.	37	Hm. $\frac{1}{36}$	$\frac{20}{xx}$	No perceptible movem't.	0	....	41	2	....	21	0	....	13	....	....	10	Teaches school. Has worn glasses to correct Hm. for three years.
7	M.	21	E.	$\frac{20}{xx}$	Considerable divergence.	11	....	14[1]	....	....	....	Less than 1	....	24	....	....	....	Physician. Reads a great deal. Eyes never troublesome.
8	M.	41	E.	$\frac{20}{xx}$	No perceptible movem't.	3	....	60	....	....	....	0	....	10	....	....	....	Bookkeeper. Wears, in near vision, $+\frac{1}{60}$.
9	F.	29	Hm. $\frac{1}{48}$	$\frac{20}{xx}$?	No perceptible movem't.	0	....	34	1–2	....	....	....	1°	12	....	1	....	School teacher. Reads a great deal. Has never worn glasses.
10	M.	23	E.	$\frac{20}{xx}$	No perceptible movem't.	8	....	34	....	....	....	1	....	16	....	....	....	Bookkeeper. Writes constantly and never has any trouble with eyes.
11	F.	15	E.	$\frac{20}{xx}$	No perceptible movem't.	5	....	34	....	....	....	1	....	10	....	....	....	Attends school, and is a constant reader. Eyes never troublesome.
12	M.	21	E.	$\frac{20}{xx}$	No perceptible movem't.	2	....	27	....	....	....	....	1	16	....	....	....	Med. student. Reads a great deal, and never experiences discomfort from it.

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[1] Upon second trial, after acquiring the nack of contracting the internal recti, he was able to overcome at 12″ 55°.

refraction were found to exist the tests were applied, first without, and then with correcting glasses. The vertical diplopia tests were made at 12″, and at 20′; at the former distance the test object employed was a small star with short, vertical bisecting line, held a little below the level of the eyes; and at 20′ a candle-flame, similarly placed. The prism used for producing the diplopia was one of only 7°, which was found quite strong enough, and more convenient for the purpose than those of greater power. As supplementary to the diplopia tests the cover test was applied at 12″, and the capacity of the internal recti muscles to overcome prisms producing lateral displacement was determined in each instance. In examining the state of refraction only the *manifest* hypermetropia was determined, as it was not considered important to ascertain the total amount.

Twelve persons, selected as I have said with especial reference to their freedom from asthenopia, in spite of their eyes being much used in near work, were examined in this manner. The result obtained in each instance is given in the table on the preceding page.

Although the number of eyes which I have examined is not large, it is sufficient for the end in view, since the results obtained show that relative divergence of the visual lines, such as has been regarded as proof of insufficiency of the internal recti muscles, does, in fact, occur very frequently, as an accompaniment of induced vertical diplopia, even in the strongest-eyed persons. A glance at the table will show that this took place, to a greater or less extent, not only in every emmetropic person examined, but that it happened in connection with low grades of manifest hypermetropia, uncorrected by glasses, in three instances in five. Of the five emmetropic persons, with the test object at 12″, one exhibited a divergence indicating an insufficiency of the internal recti muscles of 2°, and the others of 3°, 5°, 8°, and 11° respectively; and even with the object at 20′, three of these showed slight relative divergence. In the hypermetropes, with the test at 12″, an apparent insufficiency of 3° was associated with Hm $\frac{1}{60}$, 2° in one instance, and 6° in the other with Hm $\frac{1}{48}$, and of the two individuals in whom no insufficiency was discovered Hm $\frac{1}{48}$ was present in one and Hm $\frac{1}{36}$ in the other. As might be expected, none of the hypermetropes showed any apparent insufficiency of the interni at 20′, but, on the contrary, one of them showed apparent insufficiency of the externi.

The influence of the state of refraction upon the behaviour of the internal recti muscles, and the way in which neutralizing glasses modify the results of the vertical diplopia tests, are well shown in the table. Thus, while the five hypermetropes show at 12″ an average apparent insufficiency of $2\frac{1}{5}$°, which with correction of the manifest error of refraction is increased to $3\frac{2}{5}$°, the emmetropes show an average of $5\frac{4}{5}$°, and the two myopes of 12°. Furthermore, it will be seen that the 22° of apparent insufficiency which is associated (in No. 4) with M $\frac{1}{16}$, is reduced to 2° when the test is repeated with neutralizing glasses, and that (in No. 5) an apparent insufficiency of the interni of 2° to 3° is changed to apparent insufficiency of the *externi* of 1° by the correction of M $\frac{1}{24}$.

Another point to which I have alluded, the contradictory character of the results which are obtained in many cases from the different tests for determining the strength of the internal recti muscles, is also well shown. Thus, No. 4, though exhibiting at 12″ (with M$\frac{1}{16}$ uncorrected) an apparent insufficiency of 22°, twice as much as any of the others, was able to overcome, at the same distance and without neutralizing glasses, prisms with bases outwards amounting to 70°, while No. 1, with 3° of insufficiency, overcame but 14°, No. 12, with 2° of insufficiency, but 27°, No. 6, with no insufficiency, but 41°, and No. 9, also with no insufficiency, only 34°, less than half as much. The explanation of this paradoxical result is, that the ability to overcome prisms of high power thus placed does not, in fact, depend upon the strength of the internal recti muscles, but simply upon the individual under examination possessing the "knack" of causing these muscles to contract strongly—a faculty which we often meet with in persons who can look cross-eyed at pleasure.

Evidently, then, upon *this* method of ascertaining the strength of the internal recti muscles but little dependence can be placed, and since it has been shown that, in the strongest-eyed persons, relative divergence of considerable degree frequently accompanies vertical diplopia—even when every precaution is taken to prevent confusion in applying the tests—the question arises, How are we to determine the existence of actual insufficiency of these muscles? Of course, we shall have little difficulty in recognizing the higher grades of insufficiency, those which are not far removed from divergent strabismus, but the difficulty occurs in dealing with the slighter degrees—in deciding, indeed, *where to draw the line between sufficiency and insufficiency.* For myself, I confess I do not know where the line should be drawn, whether at eight or at eleven, or, perhaps, at twelve or fifteen degrees of relative divergence; but of one thing I am convinced—that the tests proposed by Von Graefe, as I have understood them, and as I believe they have usually been interpreted, are calculated to lead to erroneous conclusions regarding the strength of the internal recti muscles; and that to prevent this it is necessary, not only to take into consideration the state of refraction, to be sure that the accommodation is properly regulated, and to be careful that an incentive to binocular fixation does not arise through overlapping of portions of the vertically separated images, but, in addition, to recognize the fact *that relative divergence of the visual lines, even of considerable degree, occurring in connection with vertical diplopia, and after these several precautions have been taken, does not necessarily indicate insufficiency of the internal recti muscles, or, at least, that it is not incompatible with entire freedom from functional disorder.*

ARTICLE XXII.

CASE OF FIBROMATOUS POLYPUS OF THE BLADDER IN A CHILD.

By G. H. BALLERAY, M.D., Surgeon to St. Joseph's Hospital, Paterson, N. J., and to the Woman's Hospital, Newark, N. J.

IN the early part of October, 1879, I was requested by the Rev. Mr. S. to see his little daughter, aged nineteen months, who was, he informed me, the subject of polypus of the bladder. The child had previously been under the care of Dr. Herman Mynter, of Buffalo, whose very interesting report of the case was published in the number of the *Buffalo Medical and Surgical Journal* for August, 1879. Of the early history of the case, I learned that for about fifteen months the child had urinated frequently, and, that every time, she strained, screamed, and kicked violently, for some time after the urine had passed. In May, 1879, the mother noticed that a little red bleeding tumour was forced down during the straining. On the 11th of June, 1879, the patient was taken to Dr. Mynter; chloroform was given, and an examination made. At first nothing was discovered; but suddenly the child passed water, and thereafter strained with much force. Immediately a red, lobular, bleeding, pedunculated tumour, about the size of a hickory-nut, came into view. A ligature was placed around the base of the tumour, this produced increased straining, and, several smaller growths appeared on all sides of the larger one. Dr. Mynter says: "believing I had here a polypous new-growth of the *vagina*, and as the larger tumour *obstructed the view of the parts*,[1] I desisted, for the moment, from further examination."

Three days later the ligated tumour had fallen off; and on the posterior vaginal wall, a little above the hymen, was found "a little granulating prominence," which was believed to be the remains of "the severed pedicle." No trace was discovered of the smaller tumours, and Dr. Mynter, therefore, believed that without knowing it he had gotten the ligature around them too. As no relief to the pain or frequency of micturition followed the removal of the large tumour, a sound was introduced into the bladder, and both Dr. Mynter and Dr. Lothrop noticed a "click," as though the sound had touched a stone. Two days later an attempt was made to remove the stone. The urethra was dilated, and the forceps introduced into the bladder, but no stone was found. The finger was then passed into the bladder, but no stone detected. The bladder was then syringed out with lukewarm water. The child immediately commenced to strain, and pressed out through the *urethra* a polypous mass as large as a pigeon's egg, consisting of hundreds of small, pedunculated tumours, seemingly springing up from the mucous membrane everywhere. Portions of the mass were twisted off with forceps, others were cut off with scissors. Dr. Mynter says "very little bleeding occurred, but there seemed to be no end to the growths. The whole, considered as one tumour, had a broad base, consisting of the mucous membrane of the bladder, and it seemed to us that the whole interior surface of the bladder was involved in this singular new growth. The more we pulled, the more came out, and, believing in this case discretion to be the better part of valour, I therefore, the other physicians concurring, reduced the tumour and cleaned the cavity of the bladder."[1]

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[1] Italics are mine.

The relief which followed this operation by Dr. Mynter, was of short duration; the distressing symptoms soon returned with their former violence. When I first saw the child, although she was still rather fat, she had a haggard, anxious expression of countenance. The mother informed me that for several weeks past she had been obliged to draw off the urine every half hour; if a longer interval was allowed to elapse, the sufferings of the child were most intense. Frequently, portions of the tumour were forced out of the meatus, by the expulsive efforts following the withdrawal of the urine. As no portion of the tumour was visible at the time that I made my examination, I requested the mother to send for me at once should a part of the growth be forced down so as to become visible. Accordingly, in a few days I was sent for, and found that a large polypoid mass had been forced through the meatus. With the aid of my friend, Dr. Marsh, I proceeded to remove it; the patient being under the influence of chloroform. The mass consisted of two polypi the size of hickory-nuts, surrounded on all sides by hundreds of little ones. A ligature was placed around the base of each of the larger polypi, and by means of traction upon the ligatures a considerable portion of the mucous membrane of the bladder could be everted through the urethra. All the polypi which presented were removed with scissors. The bladder was then syringed out with warm water, and an anodyne given. The relief which followed the removal of these growths was very great; for nine weeks after the operation the child could hold its urine for three hours at a time, and improved very much in health. By the middle of December, the distressing symptoms had returned to such an extent as to necessitate the use of the catheter every hour; and by the end of the month it had become necessary to withdraw the urine every half hour. The mother (who had become quite expert in the use of the instrument) informed me that she frequently experienced difficulty in introducing the soft catheter with which the bladder was evacuated. On examination, I found that this was due to the encroachment of the growth upon the neck of the bladder. As no portion of the tumour became visible during the straining efforts of the child, an examination, under chloroform, was made on the 29th of December, in the hope that a sufficient portion of the growth could be reached and removed, to give the poor child another respite from the agony it was compelled to endure; but no satisfactory results followed this attempt. The symptoms increased in severity, mucus and pus appeared in the urine; the pulse became very frequent and feeble; the face pinched; the eyes sunken; and twitching of the muscles of the upper extremities, with occasional vomiting, occurred. The suffering caused by the pressure of the growth upon the neck of the bladder was distressing to witness; and, on several occasions, the vesical extremity of the urethra was so completely blocked up by the tumour, that the introduction of the catheter, without inflicting injury, was a matter of considerable difficulty. The little patient continued to sink gradually, and died on the 13th of January, 1880—death resulting partly from exhaustion (the effect of protracted suffering) and partly from uræmia and pyæmia. Four days before death, a considerable mass of polypoid growths was forced out of the meatus: this I ligated and removed; but nothing more was done, as it was evident that death was inevitable, and that any prolonged operative procedure would only hasten the fatal termination. At this time both Dr. Marsh and myself noticed a tumour, rising a little above the pubes, which we thought was the bladder, filled with polypoid growths.

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[1] A microscopical examination of the tumour, made by Dr. Hopkins, showed that it consisted of connective and fibrous tissue with very few cells, and was covered with normal epithelium.

Post-mortem examination, twenty-four hours after death, in the presence of Drs. E. J. Marsh and Calvin Terriberry. Examination limited to abdominal and pelvic cavities. The bladder, ureters, and kidneys, together with the uterus and ovaries, were removed and examined. The walls of the bladder were very much thickened, and its cavity was filled by a polypus, which was attached to the posterior wall of the organ, by a pedicle about an inch and a quarter in breadth. A portion of the pedicle of what had evidently been a much smaller tumour, was also found attached to the posterior wall of the bladder, at its lowest part, encroaching upon the neck of the organ. The tumour, as a whole, was about the size of a large hen's egg, and was composed of a multitude of small tumours, varying in size from that of a hickory-nut to that of a small pea. The ureters were dilated, and the pelves of both kidneys were also dilated and inflamed, and contained some urine mixed with pus. The kidneys were enlarged, and presented the lobulated appearance generally met with in the kidneys of young children. There were three abscesses in the left kidney, and two in the right. These abscesses were located on the outer or convex surface of each kidney, and presented the appearance characteristic of a pyæmic abscess. The liver was apparently healthy, but the spleen was enlarged and softened.

The points of interest in this case are: First, the extreme rarity of cases of this nature. Secondly, the difficulty of making a correct diagnosis, and applying a rational treatment in cases of this affection. Lastly, the tender age of the patient, which precluded the possibility of the performance of an operation which, had she been older, could, I believe, have been done with success.

In this case, the vagina was so small that, even after the utmost dilatation, removal of the growth by an incision into the bladder through the vagina would have been impracticable.

Viewing the case in the light afforded by post-mortem examination, I believe that the proper course to have pursued would have been to remove the growth by opening the bladder through the abdomen. Should I ever meet with a similar case (which is extremely improbable, in view of the rarity of the affection), I should consider it my duty to recommend removal of the growth by supra-pubic cystotomy. To some of my readers this may appear to be a heroic procedure, but to such I would say that "desperate cases, require desperate remedies." Where the question is simply one of certain death on the one hand, or, an operation with the possibility of recovery on the other, I think that no conscientious surgeon should hesitate in his choice of alternatives. In the case of a girl of more advanced age, or an adult female, such a growth might be successfully removed by an incision into the bladder through the vagina.

REVIEWS.

ART. XXIII.—*On the Contagiousness of Tubercle.*

1. *Consumption as a Contagious Disease; with its Treatment according to the New Views. To which is prefixed a Translation of Professor Cohnheim's Pamphlet, "Die Tuberkulose vom Standpunkte der Infectionslehre."* By DANIEL HENRY CULLIMORE, Member of the King and Queen's College of Physicians. London: 8vo. pp. 124. Baillière, Tindall, and Cox. [No date. Preface dated, December, 1880.]
2. *Consumption: Is it Contagious?* By D. FRANCIS CONDIE, M.D., of Philadelphia. *American Journal of the Medical Sciences*, July, 1871, p. 119.
3. *Consumption: Is it Contagious?* By LAWSON TAIT, F.R.C.S. Eng., F.R.C.S., etc., Surgeon to the Birmingham and Midland Hospital for Women. *American Journal of the Medical Sciences*, October, 1871, p. 419.
4. *Is Phthisis Pulmonalis Contagious, and does it belong to the Zymotic Group?* By W. H. WEBB, M.D., of Philadelphia. *American Journal of the Medical Sciences*, April, 1878, p. 426.
5. *Is Consumption Contagious?* By EDGAR HOLDEN, M.D., Ph.D., President of the Medical Department of the Mutual Benefit Life Insurance Company, Newark, New Jersey. *American Journal of the Medical Sciences*, July, 1878, p. 145.

IF we are to accept the teaching of the authors, who have written the books and papers, the titles of which are given above, it is necessary to ascertain the meaning to be given to contagion. It would seem to be well —nay, essential that the boundary lines, as at present understood, between the things called contagious and those of an infectious nature should be altered. And it may be that the time has arrived when very properly some change of view or definition of these two conditions should be made. It is a shock to hear the word contagion used in the manner in which it is intended to be understood by these writers. In spite of the great confusion of meaning attached to these words and those of similar import, it will be found that, both in scientific works and in common parlance, there is a very radical distinction in the manner of communicating disease as implied by them. It is no longer possible to appeal to their definition, or to their use by the best authors. The two words are defined as synonyms, and yet in their use it is very easy to discover different shades of meaning or even very complete divergences, and that, too, in writers who at times make them synonymous. Contagion, according to its derivation, signifies contact, and yet in its common use contact of person is the farthest from necessary for the communication of disease. Contact, not of persons, but merely contact of a person with the material essence of the disease is the essential, according to the present acceptation of the word.

If we adhere to the definition of the word, syphilis, glanders, and hydrophobia are almost the only diseases requiring actual contact, direct or nearly direct, of person with person for their communication. Inoculation would seem to be a better word for expressing the more ordinary means of their communication.

Further, it must be borne in mind that in classifying disease under these various heads, it will be found their transmission is possible by more than one method. Variola is contagious, and is also inoculable. Syphilis is inoculable but not contagious in the way that variola is, viz., by transmission through the air.

But let us look at what have been considered as the factors of contagion. First, the development, not spontaneous, of a *something* within the organism which is possessed with the power of reproducing a similar train of phenomena in a second organism, and so on indefinitely. The chief peculiarity which attaches to contagious diseases is the means of their transmission from person to person, viz., that the way they travel and the *something* which travels are unseen. This latter peculiarity is, we think, the striking and prominent idea when the word contagion is used.

As we have said, syphilis and like diseases are, according to the etymological sense, the only necessarily contagious diseases because contact is essential to their transmission—other contagious diseases have other means for communication than contact—and these diseases are more conveniently named as inoculable ones. Syphilis resembles, however, the contagious diseases in possessing the *something* which indefinitely reproduces itself.

We have, therefore, the two classes, the one according to its ordinary method of transmission inoculable, the other class ordinarily communicated by unseen methods. This attempted classification is, we are abundantly conscious, not accurate, scientific, or logical, but neither is the word contagion, as at present employed, possessed of either of these three qualities.

Let us consider the question of infection and its relations to the two above described modes of communicating disease. This word is used by many writers as a synonym of contagion; perhaps it would be more accurate to state that the adjectives infectious and contagious are used interchangeably. We think, however, in every accurate meaning and valuable sense of the word that there is a very marked difference between contagion and infection. The etymology, which, of course, is not to be trusted very far when words have wandered so far from their meaning, implies a stained, or let us say, a poisoned condition, and this effect is usually applied to the air as the vehicle of transmission.

We think that this etymological sense adheres to the word infection and distinguishes it from contagion. The air may be infected by foul gases or other qualities by which diseased conditions are produced in most persons subjected to their influence, as is believed to be the case in yellow fever. Drinking water, as well as the air, may be infected and produce dysentery and typhoid fever. It is also possible to speak of the air becoming infected with the emanation from contagious diseases. But this is not saying much to the purpose, and at best it is not saying more than that the number of contagious-disease patients are very numerous, and the air very full of their emanations. Besides, it is confounding the two eminently characteristic methods of communicating disease, which we are endeavouring, almost vainly, to differentiate, because labouring with inaccurate words whose meanings overlap, or are partly inclusive of, each other. At best, to speak of the contagion infecting the air, is to describe the lesser by the greater. Variola and scarlet fever poisons, or emanations which are strictly contagious, may infect the air, but typhoid fever which infects water, is never contagious.

If then the words *contagion* and *contagious* could be limited in their signification to the transmission of the disease through air by impalpable or unseen means or agents, inoculation to those diseases where the means are palpable and generally gross, and infection to those morbid conditions which are not either contagious or inoculable, and for the production of which emanations carried directly from one organism to another were not necessary, we should be able to form distinctions between classes of disease that would appeal to a common idea of the general characteristics in respect to their ordinary modes of transmission more conveniently than is at present possible.

Unfortunately it is not possible to classify diseases according to this method; contagion and infection are words by which we can only hope to obtain a little help for characterizing certain qualities. By thus limiting these words we partially avoid giving expression to an hypothesis of the nature of the *something* which passes, and merely define the ordinary and most usual, but not the only, mode of passage. And this we consider to be a very desirable point to be gained, since, in these days of the germ theory and microbial organisms of disease, our ideas of the nature of a malady are so liable to be influenced by the theory of its transmission. The nature of a disease must be described, the mode of its communication may be characterized by a brief word. This criticism is applicable with especial force to the word *zymotic*, which has been used as synonymous with contagious or infectious; it is an attempt to connect the nature of the disease, viz., its supposed character of fermentation, directly with its mode of transmission, and to make the two separable conditions interchangeable words. The word virus, as well as the word poison, is likewise unfortunate. They are an imaginative use of words, implying facts and conditions of which we are still in ignorance, and when the knowledge is acquired in reference to them it will be much better expressed by other more definite terms.

In respect to the materiality of the *something* of disease, opinions have varied very greatly at different periods of medical history. At no period, we believe, has the essential immateriality of the matter been claimed, yet so closely has it been thought to approach an ethereal or spirituous character that it was quite beyond the appreciation of our senses, if not beyond the ken of our imagination. But in recent days nearly all things have become material, and while philosophy grudgingly allows the imponderableness of thought, no such tenuity is conceded to disease. We see, handle, plant, and cultivate, and harvest the contagious agent of many diseases, or think we do. The contagion-bearing fungi of measles and scarlet fever were pointed out some years ago, but have since been abandoned to the musty straw from which they sprang. Some years ago the ague-bearing plant was found in Ohio, and we saw it cultivated in Boston, and now another one, we believe of a different species altogether, has just been receiving great attention in Italy. Diphtheria too has its botany.

Now, while it is universally conceded that the *something*—the transmitting agent—of disease is material in all cases where transmission is claimed to occur, yet we think, in respect to the three modes of transmission, contagion, inoculation, and infection, the bulk or size, if not the quantity, of the material transmitted bears its share in qualifying the sense in which these words are used.

In contagion, impalpable and unseen, the disease is supposed to be carried by very small amounts of the material; the morbific agent, once brought in contact with the organism, unprotected from its effects, develops and reproduces itself, and is itself ready again for transmission. In inoculation, our natural ideas turn to larger bulks, something to be placed on our scalpels. The infective diseases call up the picture, if not necessarily of large amounts of the material essential to be brought in contact with the organism, at least of a large quantity of the poisoning material which is to flood the vehicle which carries it. Such ideas, respectively, we think necessarily attach themselves to the nature of the diseases and the modes of their transmission, so far as we are acquainted with their qualities, and do not merely appertain to the words selected to express the facts.

In respect to actual substance found in the giver and receiver—the originator and organism affected by the material of disease; our ideas ally themselves in accordance with the mode of transmission, although here, we think, the question becomes vague in proportion to our diminished knowledge of the nature of the material transmitted. In the case of inoculable diseases, and in inoculation experiments, we feel certain that portions of living matter are transferred from one person to another, not knowing whether this matter is cellular in character or a fluid. This transfer partakes of the nature of a graft, and to a certain extent the material continues its active life and growth, and it produces a distinct local effect. There is likewise the power of disseminating its action through the receiving organism to a greater or less extent, but whether this is done by the original received matter or from a new formation at the seat of introduction is of course unknown. Of those diseases which are confessedly both contagious and inoculable less is of course known; there may be two elements which have the capacity of transmitting the morbid process. The typically contagious diseases have the element of mystery, uncertainty, and impalpableness so intimately interwoven in our conceptions of them that heretofore no statement about the material transferred has been possible, and free scope has been given to such words as zymotic, virus, etc. That the transferred element forms a part of the organism, and is material and not merely an influence, may be predicated, although not as yet proved; this is probably the sum of our knowledge, and we think it accords with the opinions of men in general.

Numerous special investigations have recently advanced quite different theories. Those diseases, which we have designated as infectious, seem to be quite apart and alone in respect to the material agent which. when once brought in contact with an individual, is capable of producing the disturbance in the organism called disease. Both the other classes are regarded, and, so far as their nature is understood, are looked upon as distinct entities; by entities we would imply an actual continuation of the same morbid process, interrupted only so far as incident to the actual process of transfer from one organism to another necessitated. Quite different is the infection process. With infectious diseases, in the majority of them, the pre-existence of the material disease-producing agent in another organism is not necessary to our conception of the disease. Most authors believe that the material of typhoid fever, which is not contagious, is carried by infected water, etc., from one patient more or less directly to a second, but the general class of infectious, but not contagious, diseases are thought to exist potentially apart from their development in a patient. The man who ventures into the untrodden swamp is liable to suffer from dysentery and intermittent fever, but is not liable to the contagious scarlet fever unless it is carried thither by another.

This classification does not include all known diseases, but only those about which heretofore confusion has existed by the use of the words contagion, infection, and inoculation. We think the views here presented will assist in clearing up this confusion, and put us in a position to determine the question before us. We have said that the use of the word contagion as applied to the means of communication of tuberculosis was a shock to our preconceived notions of the matter, and that perhaps the boundary line between contagion and infection required to be shifted, not of course to meet this question, but to place it more nearly in accord with our increasing knowledge of the nature of disease in general.

One word further before considering the facts and opinions furnished by these authors. Contagious and inoculated diseases clearly imply an origin outside of the organism; infection is conceivable as having a source both outside and inside the person affected. Thereby the idea of infection is disassociated still farther from other means of communication and from other communicable diseases, and approaches more closely or shares a common ground with such morbid processes as are spoken of as constitutional diseases.

Having thus somewhat settled our minds by considering the basis on which the solution of this question rests, let us see what are the materials furnished by these writings.

The most important of these papers is the work of Cohnheim, his brochure entitled, "Die Tuberkulose vom Standpunkte der Infectionslehre." It is here given us in translation, and is prefixed to Mr. Cullimore's original matter on the subject "of consumption from a sanitary and pathological point of view, including its treatment according to the new views." In the translation, Cohnheim's pamphlet occupies twenty-four pages of the one hundred and twenty-four. We had the opportunity of reading Cohnheim's writing shortly after its first appearance in German, but do not have the copy at hand for comparison with its present form in English. We read the original with a great deal of interest, and have now re-read it with renewed pleasure, and each time we have been struck with the positiveness of the views expressed by him, which in this respect places the work in a striking contrast to others on this subject.

Cohnheim at first adverts to the opinions of Virchow (1860) on Tuberculosis, and especially in relation to the new doctrine promulgated by "Villemin's treatise (1865) on the transmission of tuberculosis by inoculation." He then alludes to the slow concurrence on the part of others, but "as time passed on, dissenting views respecting it decreased more and more, and now there are in the profession few who deny that *tuberculosis is a contagious disease*." We quote a portion of the sentence, with the italics of the author, as it strikes the key-note of Cohnheim's views of tuberculosis. He offers the "result of his investigations in the new field of inquiry" purely as a pathologist, and not from their clinical aspect.

The author describes first the distinction made by Virchow between true tubercle and the results of the hyperplastic and inflammatory processes; to the former belong the pin's point collections, which increase to nodules of varying sizes by the confluence of a greater or less number, and under the latter we think of the scrofulous lymphatic tumours and caseous pneumonia. These two products have nothing to do with each other in their genesis, but in their terminal stage suffer the common fate of caseation or degeneration. He next alludes to subsequent anatomical discoveries of the structure of tubercle, which have been brought into prominence since Virchow's original work—to the giant cells to whose frequency of appearance Langhans was the first to draw our attention. The work of others is also mentioned; for example, Weigert's criterion of tuberculosis, Schuppel's anatomical history of the lymphatic glands in this disease, and also that of other writers.

Cohnheim passes next to the gain medical science has won through the improvement in the method of making experiments, and records the fact that to these alone we owe the benefit of the discovery of the contagious tendency of tuberculosis. He speaks of the methods and the care required in the experiments of tuberculization, and it is to be regretted that so eminent and thorough an investigator has not here furnished us with more details of his work. This is, of course, impossible in the contracted space of his small pamphlet; but it is by these details only that his proposition can receive acceptance.

The conclusions from his labours are stated very definitely.

> "Tuberculosis can only be produced by tubercular matter. It is impossible to have found a more perfect criterion with respect to this particular disease. Every symptom tuberculosis has is manifested in animals experimented upon; those particular symptoms, and none other."

After very clearly setting forth the difficulties or the impossibilities of making an anatomical diagnosis between various kinds of deposits found in the lung, between the truly tubercular and those of inflammatory origin, he proposes to rely upon the inoculation test for their differentiation. Let us again quote his conclusion on the inoculation test.

> "If we inoculate with slaty indurations and peribronchial nodules, or with the thickened contents of a bronchial tube, the rabbit will not become tuberculous, a result which never fails if the inoculation be performed with tubercular virus. And what are we taught from inoculating with matter taken from human tubercle on one side, and those caseating, inflammatory, and hyperplastic processes? in short, scrofulous ones, or the other? Nothing more nor less than that all these products are potent in a similar degree"—"inoculation with a piece of lung affected with caseating pneumonia, of a caseating testicle, produces a like effect; and nothing succeeds better in inoculation than a freshly excised *scrofulous gland cut out of the neck.*"

He claims for the materials which produce the same results in experimentation a similar nature, viz., tubercular.

He goes on to show the unsatisfactory state of the microscopic proofs of the tubercular nature of deposits found in the organs, and with this statement every one must agree. He shows that the various criteria proposed are nearly valueless; the *kern*less accumulations of Lebert, the giant cells, and nodules which appear in their walls, are all conditions or appearances which are found in quite dissimilar growths or deposits.

His conclusion to this part of the subject is as follows:—

> "It is not caseation alone, nor kernless accumulation, not nodules or giant cells which are characteristic of tuberculosis, but *solely the caseation the result of specific causes, and the nodules which are derived from specific sources.* Let us try as we will, it won't help us; there are no anatomical definitions to be found for tubercle and tuberculosis. It must yield to the etiological." "Those who believe that all contagious virus is parasitical in its nature will not hesitate to believe that the tubercular poison is corpuscular; and we may await with certainty that in a not very distant future these specific corpuscular elements may

be demonstrated in the tubercular nodule and in the scrofulous products, which the lover of historical names may designate as the tubercular corpuscle."

We do not believe that Cohnheim's views will any more be productive of unanimity in relation to tubercle than those previously promulgated, and yet there is something very seductive and simple in his theory. But before we accept it, let us examine what his conclusions mean, and whether his argument is logically correct.

In the first place—and we think very properly—Cohnheim rejects caseation as the criterion of tuberculosis. This was the claim of Laennec's theory, that every caseating process in the lung was infiltrated or disseminated tuberculosis. Virchow rejected the claim. Now Cohnheim, while rejecting the criterion, reclaims all or nearly all the products of Laennec as tubercle, or tuberculoid, as well as many others which, until now, have never been so regarded, or only exceptionally so. He wishes to give them the name of "eruptive tubercularization." "The cheesy portions, as a rule, contain very little fat, and have the consistence of firmly coagulated white of egg." "It is not, however, necessary for us that they should be classed as tubercle; they are tuberculoid, and the softening and ulceration are only the direct consequences of the caseation." In other words, they are not tubercle, but tuberculoid, because his experiments with the material develop tuberculosis. He assumes in the first place that tuberculosis is a contagious disease, and then tries to prove that all these forms of matter found in organs are tubercle because they produce tuberculosis. The failure consists in the anatomical basis, both at the beginning and the end, being unknown or undefined. He neither defines the anatomical structure with which he starts, nor that at which he arrives or produces by the inoculation. It might perhaps help his argument, but of this we are not very certain, if occasionally, by inoculation with caseating pneumonia, he developed a caseating pneumonia, or to reverse the condition by using the round hard nodules, a caseating pneumonia resulted. But, no, whatever is used, the outcome is always the hard nodule. In this result he agrees with all other investigators, and we have seen the same ourselves.

He accounts for the result, not through the transplantation of any anatomical structure, but from the presence of a *virus*. "We can look upon caseating eruptive tuberculization and the little round nodules clustered in lymphatic cells as really belonging to tuberculosis when the matter inoculated from them produces tuberculosis; that is to say, when they themselves are the production of tubercular virus." This expression of opinion we regard as very unfortunate. We do have to speak of things as *virus*, and hitherto it has been confined in its use to explain conditions which were unknown, and as a convenient cloak to our ignorance. We have long spoken of the syphilitic virus, and the virus of a rattlesnake, but these expressions, if they mean anything, mean actual anatomical or similar entities, which we can handle, and which taken from known structure or morbid growths produce equally well-known anatomical results.

After speaking of the results of inoculation with a scrofulous gland, the author says: "We are consequently made aware of the close connection between these processes in spite of the difference of their anatomical genesis," and goes on to ask the question, "Would any one, because syphilitic caries is a different anatomical process from brain gummata and the eruption of psoriasis—would any one separate these things one from the other, and deny their connection one with the other?" We would answer, no; for the reason that these things can be shown to be the same by other methods than the gross external appearances. The bone gumma and the brain gumma agree in their histological characters, and these differ from each other and from the psoriasis or a syphilitic pustule only in so far as they are altered by the seat of their growth, or the tissue in which they develop. None of these are recognized to be of the same character, only by being derived from the same or similar initial lesion, or by producing the organic lesions of the same character when inoculated; their recognition depends on their histological characters. Cohnheim would not fail to recognize a bone or brain lesion due to syphilis, and would invariably differentiate them from tubercular disease. It seems to us weak to be prepared to class everything as tubercular, because, in the first place, no anatomical definition or delineation of the cells has as yet been found, and, in the second place, because various matters, both true tubercle, as acknowledged by all, and caseating material, thought by many or most others to be of different character, do, when inoculated, produce true tuberculosis.

It would seem much more justifiable to conclude that two things could by inoculation produce tubercle, since tubercle itself is, according to Cohnheim, not a definite anatomical entity, and can be produced by two other things equally indefinite. If tubercle were a morbid growth, such as carcinoma, this argument would not hold, and it would be difficult to escape from Cohnheim's conclusion. But we are dealing not with a definite anatomical entity, nor with a self-limited disease; it is rather a dyscrasia, and it is, therefore, not a difficuit supposition that more than one factor or element may lead to its production. We think that an important fact has been overlooked in judging of this inoculation question which has not received the attention which it deserves. In all other inoculable diseases, living matter, or at least matter taken while in the living state, and most carefully preserved to be used fresh, is required, but in tubercular inoculations matter is used which, before the death of the patient, is dead anatomically, and has been so for indefinite periods before the post-mortem; even tissues preserved in alcohol are said to be efficient in communicating a living virus. Many suppositions can be made to account for the activity of this virus, but all require a greater faith than the plain straightforward statement that dead caseating matter, as well as fresh living tubercle, can reproduce tuberculosis in the inoculated subject.

It would seem as though the followers of this new doctrine had started out to find an anatomical entity, called tubercle, had failed to find it among the mazes which this dyscrasic change presents, and failing had recoiled into the old notions of Laennec, that every one of these processes was tubercular. This disease is not a morbid growth like carcinoma, it is not a self-limited or self-bounded disease like scarlet fever, and, therefore, we should not expect to find a particular cellular arrangement as in the one, or a contagion carrier, parasitic or otherwise, as in the other, for a disease like tubercle. We do not think we shall ever be gratified with seeing the "specific corpuscular elements," or the typical histological features of tubercle. In fact, we thought that almost every one had given up looking for specific cells in morbid growths, as well as in every other morbid change. We used to hear of cancer cells, but we never expected to be confronted with a *specific tubercle corpuscle.* We have rather passed beyond cells, since their form and size are dependent on so many purely accidental conditions, and reached the position where we regard all morbid changes from the manner in which they are born, and live, and die. And we try to think of disease as a perversion of normal growth, an excess or deficiency of physiological action, and not as some new entity living and growing in the body, and introduced from without. In accordance with this prevailing thought of modern pathology, it would seem much more likely that tubercle—since we can find no definite anatomical characteristics for the shapes and forms which it invariably assumes—is a perversion of growth rather than a distinct new formation, and we can find no other meaning in the inoculation theory, or a virus. We say we can find no other meaning in the inoculation theory, except that it is intended to imply a direct transference of anatomical elements, which reproduce similar anatomical forms in their new position; it is either this, or else that any caseating matters are productive of the dyscrasia called tubercle.

The second chapter of Cohnheim's will be found very interesting to all who are convinced of the contagiousness of tubercle, and his illustrations of the mode of invasion of the organism are very apt. We do not think, however, that many can repress a smile when they read that the virus of a contagious disease, in cases of tuberculosis, "passes from the tubes into the peritoneum, in genital tuberculosis in the female;" or "that the poison gets access to the brain through the nostrils, and passes thence through the foramina of the ethmoid bone." Have we gone back to the days of the Greek and Arab fathers in medicine that we have to support a theory by such suppositions and the aid of inoculation experiments with caseating material?

In respect to primary tuberculosis of the bones, here is the explanation advanced: "Although in most cases the development of tuberculosis has been traced to injury, yet it is not to be supposed that it can beget the tubercular poison; and so far as I can see, the only conclusion to be arrived at is that the virus is already circulating in the blood, and that the inflammation resulting from the injury attracts the poison from the bloodvessels and makes it settle in the tissues." This would be very good reasoning if the existence of a virus were shown conclusively, but it is not proof. We do not think the reason is as good as the old one, that the inflammatory matter, resulting from injury—perhaps caseating, for all we know—leads to the perversion of growth and the formation of tubercle. How unlike the virus of other contagious diseases, it does not appear equal to producing the disease in the organism in which it resides, but is all potential for inoculation. If the poison is circulating in the system, but unlocalized, a patient must be capable of communicating it, but does not show its manifestation until the bone injury "attracts the poison from the bloodvessels and makes it settle in the tissues." This seems to us very much like saying a person may disseminate a disease before he has it himself. We shall begin to think that the old Griefswald staff-surgeon of Cohnheim's student days, which the author quotes, was right, "We are all more or less tubercular."

In chapter third, Cohnheim speaks particularly of acute miliary tuberculosis, and the difficulty in accounting for these outbursts of the disease. He alludes to the theory of Buhl that the anatomical basis of tuberculosis is a pre-existing caseating deposit, which forms the starting-point of the acute eruption, and says that this is of no value to those who regard the disease as a contagious malady, since they consider caseous deposits "as a part of the tuberculosis and a production of the same virus." How is it with an inflammation at the appendix vermiformis resulting in an abscess and enlarged cheesy glands and subsequently development of miliary nodules throughout other organs? In these cases the miliary tubercle is most abundant in the peritoneum immediately surrounding the original disease. Does the author mean that the original inflammation was tuberculosis? Supposing the inflammation resulted from an injury, and it was only months or years subsequently that the enlarged glands of the part gave evidence of softening, and shortly after this event the eruption of miliary tubercle took place, do we need to introduce a supposed virus and a contagion to account for the result? In such cases, unlike the inoculation with caseous matter, the retrograde products of inflammation are introduced into the circulation by a process commencing and completed within the organism. In the inoculation experiments it is supposed that the caseating material contains a tubercular virus, but we think it is asking too much for us to believe that a perityphlitis is tubercular.

Local tuberculosis, which is also discussed in this chapter, does not favour a belief in the contagious theory, and the explanations offered by the author do not take away the difficulties in accepting this view. His comparison of tuberculosis to syphilis, as we have already said, is not a particularly happy one. Whatever may be the results of his experiments, he cannot mean to contend that syphilis is a contagious disease in the sense in which he thinks tuberculosis is contagious. No person would ever acquire syphilis by nursing or by breathing the same air as a syphilitic patient; no, not even if the patient had syphilitic disease of the lung. One does not acquire tuberculosis, nor syphilis, from living next house to a tubercular or syphilitic patient.

The whole question resolves itself into this, if the doctrine has any practical clinical value: that by such intimate relationship of two persons, the one nurse, the other patient suffering from tubercle, the healthy person receives into the lung, by inspiration, small particles of the tubercular matter detached from the diseased lung and expired by the patient. It is also claimed that besides the miliary deposits, other conditions of the lung, usually viewed as of inflammatory origin, have also the power of communication of the disease. In fact we believe it is not claimed that the miliary form of disease is contagious, but solely the latter stage of caseation. This power is supposed to depend on a virus of distinct and powerful kind, but tuberculosis, unlike every other contagious or communicable disease, does not, according to the terms of the new doctrine, ever produce such definite organic changes in the tissue which can from their histological structure be recognized and positively pronounced to be tubercle. As already quoted, Cohnheim says "there are no anatomical definitions to be found for tubercle and tuberculosis." Tubercle, therefore, is utterly dissimilar in this respect, according to Cohnheim, from every other known contagious or inoculable disease, at least of any of those about which a doubt of their contagious character can be entertained for a moment. Every other communicable disease has a definite anatomical lesion from which it takes its start, and is capable of reproducing the histological lesion. We do not believe that the independence, definiteness, and distinctness of a disease can be shown in fact, or maintained in theory, apart from its anatomical changes, gross or minute.

What is true of other diseases, we believe to be true of tubercle. We believe that tubercle has definite anatomical conditions, as definite as variola or syphilis. Whether tubercle can be communicated as typhoid fever is, or as variola, or whether it is communicable as syphilis is, Cohnheim has not shown. His inoculation experiments have not shown. They have merely shown that both from introducing miliary nodules and also caseating material into different organisms, free from tubercle, tuberculosis is developed. If he was content to claim that tubercle (miliary nodules) produced by inoculation tubercle, its inoculable nature could be granted—in fact, it must be acknowledged if he were willing to recognize the tubercle producing and the tubercle produced as definite structures. This he denies to them.

We think he denies it very unjustly. No one fails to recognize, both from its gross, as well as its microscopic appearances, a meningeal tubercle or one in the peritoneum, and each of these resembles the other quite as much as carcinoma mammæ does carcinoma of the liver. The great difficulty in this question of tubercle always has been, and appears to be equally so still with some, from the appearance presented by phthisical lungs. In the large or small cheesy masses, the infiltrated tubercle, so called, of Laennec, where nearly the whole area of the microscopic section presents a mere debris of lung tissues and granular and cellular elements, it is not to be expected that its original nature can be determined, but if tubercles are present anywhere in the lungs, there is usually enough lung or pleura not in a degenerated condition to afford samples of a fresh, well-defined tubercular growth or change. If tubercles are not found, the fair, common sense, straightforward conclusion to be drawn is that the disease is not tubercular. If they are present, it by no means proves that the cheesy masses are tubercular, or that they contain a tubercular virus, in the strict sense of this word. If the cheesy masses come first, the case is one of auto-inoculation, just as in the case of Cohnheim's and all other inoculation experiments. In both these latter supposed conditions, the presence in the body of a sufficient amount of caseating material leads to the development of tubercle. There is no need to suppose the presence of a virus or any contagion, unless we use the word in a loose popular sense; but these terms, applied in the manner suggested by the new doctrine, are strained, forced, and unnatural. Hence we say that our present meaning of contagion, and the boundaries between infection and contagion, stand very much in need of alteration before tuberculosis can be admitted among contagious diseases.

It cannot be contended for a moment that syphilis is a contagious disease in the sense which is intended by the new doctrine. Yet it is very possible to suppose that a fond and attentive nurse constantly bending over a patient suffering from syphilis of the lung might, by the inhalation of detached particles of the syphilitic disease, become syphilized; or if a large collection of material from chancres was made, pulverized and atomized for weeks and months in the presence of a number of people, possibly some of them would contract syphilis. If they did, the disease would have been derived from a definite anatomical lesion, and would reproduce one just as definite, both capable of diagnosis from definite histological character. If they did not contract syphilis, it is more than probable they would from bad air, etc., become affected with catarrhal pneumonia, which, in the course of time, would form cheesy masses in the lung. These cheesy masses by inoculation, so we are taught, produce tuberculosis in the lower animals. It would not be fair to conclude that syphilis in this roundabout manner leads to tuberculosis.

The remaining pages of the book are of original matter furnished by

Cullimore. After a few pages of preliminary remarks, which are quite interesting, but which in some of the conclusions drawn from them are not consequential, he passes first to the consideration of the histogenesis of the giant cell. The discussion of the giant cell in relation to tuberculosis has become very tiresome. We know of no sadder history than is furnished by a review of the various opinions on this subject. What a waste of valuable time has been made trying to read the nature of disease from the form of the cells instead of looking at the force which controls the activity of the component parts of the new formation! The author draws the correct inference in relation to this peculiar cell that its "presence or absence is of no particular importance, as helping us on the road to the discovery of the exact character of the tubercular virus;" but did he expect to see the virus in these cells?

He next speaks of the "test of tuberculosis founded on the results obtained by the introduction of the virus into the system." We have not yet alluded to the discrepancies and contradictory results obtained by different experimenters. Cohnheim is the only observer who asserts positively the invariableness of the result, but his translator seems to differ from him, and while acknowledging the contradiction, says they "do not affect the main question of the inoculability of the virus." It is evident how Cohnheim arrives at his positive assertion; he simply asserts that no material contains the virus that does not produce tuberculosis, and therefore using all sorts of material, the failures are called non-tubercular. Certainly such results should not be relied upon to prove the presence of a virus, especially when other observers, using material for inoculation which confessedly is not tubercular and can have no possible relation to it, such as bronchitic sputa and cheese, are able to produce a tubercular deposit. And when it comes to explaining these discrepancies by supposing, on the one hand, that the inoculated subject has already acquired the disease by previous contagion, and that the virus circulated in their vessels, and under the influence of the inoculation the virus left the vessels and settled in some organ; or, on the other hand, that the person from whom the bronchitic sputa was taken was subject to *latent* tuberculosis; with suppositions similar to these before us it becomes impossible to argue. Was the milk from which the cheese was made taken from a supposed tubercular cow which had as yet no manifested local disease?

At one time the supporters of the new doctrine argue for a small amount of virus in the blood, at another for a very large amount; it would seem, therefore, probable that a number of observations could be accumulated where the blood-containing virus was capable of producing tuberculosis by inoculation. However, we know of no such observations. In this chapter we next find considered some minor objection to contagious virus, and the question of food as a vehicle of contagion. all of which is well given, but which does not add any proof to the contagiousness of the disease.

The remaining portions of the work are devoted to the symptoms and etiology of consumption, and of acute miliary tuberculosis, and the prognosis in accordance with the teaching of the new doctrine. The third and fourth chapters refer to the question of treatment, especially in reference to climate, etc. etc., and the immunity of certain countries as compared with others from the disease. An appendix is given consisting of meteorological tables.

The other articles on the subject of the contagiousness of tubercle or consumption, the titles of which head this review, have so recently appeared in this Journal, that it is not necessary to give any abstract of their contents. They all consider the subject from its clinical aspect, and adduce the proof from the opinions of practical physicians. Dr. Holden is particular to state that the question proposed is whether consumption is, without direct inoculation, communicable by one person to another, and Dr. Webb considers its inclusion in the zymotic group of diseases.

Dr. Holden states that "the real point being whether any septic material is eliminated from the body of a person suffering from necrobiotic changes in the lung, which, floating in the air or transferred by contact, may develop the same affection in another person," but we conceive that the question is something really very different in settling the question of contagiousness. The question which he states is a most important one, and no other one can possess a more vital interest so long as the mortality lists show so high a death-rate from this disease.

Let us see what Dr. Holden's point implies in relation to this question of contagiousness. His question is of *any* septic material floating in the air producing the same disease. What does he mean by "any septic material" and by "the same disease." The "any" must be identical with the "same" in order to show contagion. Smallpox is produced by septic material floating in the air, but the septic material is the same, and is—according to universal belief—derived from and identical with that derived from a previous case of smallpox. To prove the sameness of the septic material with the disease, namely, tubercle, inoculation-experiments have been appealed to. What is their answer? That tubercle can be developed by the introduction of true tubercle nodules, by caseating material, and by cheese.

We are ready to grant that any septic material—or almost any—does produce, when properly introduced, tubercle. We know of no experiments which show that it, viz., caseating material, produces anything else but the small miliary nodules; the experiments, we believe, have not been claimed as showing that they can develop catarrhal pneumonia or other necrobiotic lung changes, and it is very certain that such changes occur in animals not inoculated but housed in a similar manner to those subjected to the experiments. We do not think, therefore, that the essential sameness has been shown. We do not wish to cavil with words, but suppose any one should say that bricks, from a falling building, flying through the air came in contact with a person's head and produced a fracture of skull, and any one else showed that the fall of decaying trees in a forest did the same: the necrobiotic changes are evident in both cases, and the fractured skull is the same; yet there is a want of sameness between cause and effect. It is not claimed that fractured skulls are contagious, although there is a very evident diseased condition perceptible in the skull, and this condition was brought about by a diseased condition of the house and of the tree. The want of likeness between the diseased thing producing and the diseased thing produced is in this illustration very evident, and want of likeness is to us equally evident in the destruction of the lung, called phthisis. In the first place, no one believes that all cases of consumption are due to contagion in the sense intended by the new doctrine. Secondly, it can be shown that the conditions anatomically viewed are not identical, and Cohnheim, as already quoted, expressly denies any definite anatomical criterion. In all other contagious diseases identity of anatomical forms is very clear, for example, variola; in other cases where no very marked anatomical change can be found post-mortem, the symptoms, course, results, etc., are so definitely uniform, and so accurately reproduced, that there is no longer any question of identity. How different is it with phthisis!

Among the later papers which have appeared on this subject, we wish to call attention to one by Dr. Whitney on "The Inoculability of Tuberculosis," which is to be found in the *Boston Medical and Surgical Journal* for July 28, 1881. It is an exceedingly clever paper, and covers very completely the pathology and bibliography of the subject from the beginning to the present date. He considers the three-fold aspects of the question, viz., the inoculation experiments, the food, and from inhalations.

It is with the scientific aspect of the question that we have mostly dealt, rather than the two latter and more practical and every day points, and we believe that this is the proper point from which the subject should be viewed.

Unquestionably the subject from the first point of view is not by any means a settled one; in fact, whether it will ever be settled with unanimity is, we think, doubtful. Some one will be found, as has continually been the case during the past half century, who is ready to introduce some immature but plausible supposition to disturb the professional mind.

What we think is more important to settle than the absolute correctness of the inoculation experiments, is what we intend to prove by them, granting their correctness. And in considering the contagiousness of tuberculosis, we want to settle if we mean that infectiousness is the same thing as contagiousness. It does not make a very great difference whether it is or is not; but settled definitely one way or the other it must be. And next, are we to consider the question proved for or against contagiousness (or infectiousness), if a varying lot of matters produce by inoculation tubercle. It seems to us that success with one small piece of cheese in producing tubercle spoils the whole attempt at proof. There is no longer a like producing a like; it is various unlikes always followed by the same like. It would be in some sort a confirmation of Cohnheim's peculiar view if occasionally the various unlike substances used in inoculation were followed by the production of unlike results—say, for example, a miliary nodule caused a caseous pneumonia, or if cheese at one time caused miliary nodules, and at another catarrhal pneumonia.

Whatever objections are offered to the inoculation experiments, or however much doubt may be thrown on their evidence, we cannot question the importance of the dangers involved to individuals of becoming tubercular by means of food derived from tubercular animals, and by the inhalation of breath or of particles expelled from the lungs of tubercular patients. It is claimed that the disease is communicated by this means, and it may be that it is more frequently communicated than we are in general aware. The evidence of it in respect to food is not very abundant as yet, and in respect to inhalation, it partakes of that general nature which does not rise above the grade of possibility, or even, let us say, probability. It must be remembered, however, that the communication of the disease by both these means is comparatively a new investigation, difficult to carry out with exactness, and from which in time more positive data will become available.

The discussion of the communicability of the disease by means of food, especially to infants and children by milk, seems a much simpler and easier question than that by inhalation or direct contagion or communicability from person to person, because with animals the carcasses and the pathological alterations are ever ready to our hand for examination, and it can at once be settled whether the milk-furnishing animal is the bearer of a true tuberculosis, or is afflicted with a catarrhal pneumonia or some other pathological process. Let us be careful to bear in mind that because the milk from a *sick* cow is fed to an infant, who subsequently becomes tubercular, that it is not a proof that tuberculosis is contagious.

The same criticism must be applied to the communication of this disease from patient to nurse. It would seem, from the records furnished by at least two of these papers of which we have spoken, that both at present and in past times, a very considerable number of men have viewed with awe and dreaded the possibility of a consumptive communicating the disease to healthy persons who were in contact with them. But how much does this opinion prove?

With every desire to believe the evidence in a matter of so great importance, we must still insist on the great difficulty there is in showing the true sequence of cause and effect; in other words, to determine with accuracy when the *post hoc* becomes a true *propter hoc*. If contagion or infection from external sources were regarded as the sole cause of tuberculosis, the decision of the question would immediately become a comparatively simple one; but the most enthusiastic advocate of the contagion theory does not claim that this is the only means of its communication, and fully recognizes that many cases of tuberculosis originate *de novo*, and by what we may call self-infection or self-inoculation.

So long, therefore, as the double source of origination is spoken of, the results of contagion would always necessarily be regarded as most doubtful of belief. Granting for the sake of the argument that a patient suffering from a destructive disease of the lung does cause, as the result of close contact, a similar condition of the lung in a healthy person, what is proved by it?

Very certainly that the two persons ought to have kept farther apart. But does it prove contagiousness? No; and the inoculation experiments answer the question also in the negative, by showing that almost any foreign matter introduced into the organism is capable of produing genuine tubercle and tuberculosis. It is strange that the phthisical patient never communicates tubercular meningitis or peritonitis to the nurse, or that general tuberculosis, of other organs than the lung—conditions, therefore, in which the blood must be surcharged with *virus*, if any exists—does not propagate similar diseased conditions.

The natural objection which the advocate of the contagion theory may interpose in cases where the diseased spot does not obtain free communication with the channel of its transportation, as in lung disease, is quite unreasonable. A disease which is contagious, and has a virus, is certainly a blood disease, *i. e.*, the virus itself must be circulating in the blood, and therefore carried freely to the air by means of the lung, as well as by other secretory and excrementory channels. To deny this, and to claim that tubercle is only contagious when seated in the lung, is at once to dethrone it from its position as a contagious disease, and to make it a purely local matter. To claim that it is communicable only when seated in the lung, introduces the doubtful element of the possibility that the air from the breaking-down lung carried, not a virus, but just such matters as we know from experiment are capable of inducing tuberculosis,—matters which are themselves not tubercle, but merely disorganized products.

Again, granting that a person suffering from destructive disease of the lung does, by means of inhalations or other contact, induce genuine tubercle in another, what is it necessary to show before contagion is proved? In the *first* place, that the disease in the contagion-giver was identical with that of the receiver. It ought to be shown that the two have a closer resemblance than merely the power to destroy the lung tissues. To show the lung broken down in one case and genuine tubercle in the other does not prove the *contagiousness* of tuberculosis. No one except those who advocate the contagion theory disbelieves in an anatomical structure by which tubercle can be recognized. Cohnheim apparently disbelieves in an anatomical structure because matters other than those universally recognized as tubercular do, when inoculated, show a power of producing true tubercle. This argument is very much like a circle, and then finally begging the question. *Secondly.* To prove contagiousness, it must be shown that disease, as occurring in the receiver, was not an accidental catarrhal inflammation, which has, as we know, a power of auto-inoculation.

Finally, the only other case to be supposed is that of a nurse acquiring catarrhal pneumonia from contact with a chronic catarrhal pneumonia patient. We believe no one claims that catarrhal pneumonia is contagious.

M. L.

NOTE.—The following are the latest reported investigations of the subject of the communicability of tuberculosis:—

M. Toussaint reported to the Academy of Sciences in August last on the results of his experiments in producing tuberculosis with lymph taken from "a cow in an advanced stage of tuberculosis." Toussaint's account mostly relates to the existence of a tuberculous microbion and to its artificial cultivation.

Krishaber and Dieulafoy have been repeating the usual inoculation experiments with monkeys "as being the animals which the nearest approach to man," and show a very large proportion of successful results in producing tubercular lesions. These observers claim that the "tubercular granulations prove most rapidly transmissible, while the pulmonary parenchyma was less infectant." Their communication was addressed to the Académie de Médecine last August.

ART. XXIV.—*Die Actinomykose des Menschen, eine neue Infectionskrankheit auf vergleichend-pathologischer und experimenteller Grundlage geschildert.* Von Dr. E. PONFICK. Mit 6 Tafeln. Berlin, 1882: pp. 132.

Human Actinomycosis. The Description of a new Infective Disease based upon Comparative Pathological and Experimental Study. By Dr. E. PONFICK. 6 plates. Berlin, 1882: pp. 132.

AT the recent twenty-fifth anniversary of Virchow's professional residence at Berlin, many of his distinguished pupils and assistants gathered together for the purpose of paying him their respects and congratulations. They then presented to him renewed proofs of their scientific and intellectual activity in the form of original articles relating to some subject in medicine towards which their attention had been directed in consequence of his teachings. Such work is likely to have been accomplished despite the anniversary, but its completion at a given time is to be regarded as due to the powerful stimulus of the occasion. One of the articles then offered is now before us in the form of a monograph, which is destined to excite a deep interest in the medical world from its immediate importance, and the novelty of its subject. Its general bearings are no less interesting than its practical tendencies, and it presents an elaborate and comprehensive picture of what has thus far been a collection of single and somewhat limited views from various standpoints.

Within the past few years the German journals have contained brief communications and notices concerning a disease common to cattle and man, which had hitherto not been recognized as a distinct affection. It has acquired special importance from its severity and comparative frequency, as well as from the relation it presents to the activity of minute fungi whose presence is found to be intimately connected with the origin and dissemination of the disease.

In 1877 Bollinger of Munich published his discovery that a curious affection of the jaw-bones of beef-cattle, heretofore looked upon as scrofulous or sarcomatous, was intimately connected with and apparently due to the presence of a vegetable organism. This organism was examined by Harz, and, at his suggestion, received the name of actinomyces—radiating fungus—from its peculiar appearance.

The disease was characterized by the presence of soft, juicy, nodulated or lobulated tumours, of the size of a child's head even, growing from the alveolar processes of the molar teeth, or the spongy portion of the upper and lower maxillary bones. As these tumours increased in size they projected on the one side or the other, destroying all the normal tissues interfering with their growth. They were of a whitish colour on section, and presented a large number of yellow spots, resembling abscesses. The latter contained peculiar sulphur-yellow bodies of the size of hemp-seed, with a greasy feel. The structure of the tumour was composed of a granulation-tissue, while the yellow bodies consisted of a meshwork of innumerable branching threads with knobbed ends, the actinomyces. As these fungi were constantly associated with the tumours, not only of the jaw-bone, but with others in the tongue, pharynx, larynx, stomach, and adjacent lymphatic glands, and were regarded as the cause of the tumours, the term actinomycosis was given to the disease.

Ponfick was early enabled to confirm these observations of Bollinger as applying to cattle in Hanover and Silesia, and found that the disease frequently occurred in the vicinity of Göttingen.

In the year following the announcement of the discovery of this affection in cattle James Israel of Berlin published in Virchow's *Archiv* an account of two cases of a peculiar mycosis occurring in man, one of which terminated fatally. A notable feature in both was the presence of abscesses, in which were yellow granules composed of fungi. The patient who died was treated in the surgical ward of the Jewish Hospital, and was regarded as suffering from chronic pyæmia. Israel's paper contains an extended account of the appearances of the fungus, which, in certain respects, was considered to resemble the Streptothrix Forsterii. He advanced the opinion that in one of the instances the fungus made its way from a carious tooth into a resulting abscess, and thence was continued into the lymphatic vessels. The peculiar contents of these abscesses were shown to Langenbeck, who stated that he had met with a similar experience in 1845, and had ascribed them to a peculiar fungus. From his notes and drawings, made at the time, it was obvious that his case was identical with those reported by Israel.

Early in 1879, Ponfick, then in Breslau, made the post-mortem examination of a man who had been treated for some time for a chronic pulmonary affection. He finally suffered from a phlegmonous inflammation in the vicinity of the pleura, which opened externally in the infra-spinous region and elsewhere in the back. Numerous fistulæ were present in which were found peculiar clumps of fungi, which he identified with those he had observed in the actinomycosis of cattle. Fully appreciating the importance of this observation he at once reported the case before the Surgical Congress, then in session at Berlin, and illustrated his report with specimens. He also maintained that the cases of Langenbeck and Israel above mentioned were not peculiar pyæmic affections, as claimed by the latter, but were identical with his own, and were all to be regarded as due to the presence and growth of the actinomyces.

Similar cases were speedily observed and reported in Germany by Israel, Ponfick, Rosenbach, and Partsch. Sixteen cases, eight of which were fatal, are tabulated in the work now in review; and still another has recently been reported by Weigert.

Notwithstanding Langenbeck and Israel first described examples of this disease occurring in man, Ponfick deserves the credit of fully identifying the affection with that met with in cattle, and of making the first public announcement of this fact. It is to him that the establishment of the human actinomycosis is due, and in his monograph the results of his observations and studies are presented. We find here not only a detailed account of the five cases observed by the author, but also the results of his study of this affection in cattle. It appears that the disease has long been known to occur frequently in different parts of Germany and in other countries, especially in Italy. He considers that, under what has commonly been called farcy or bone-distemper (wurm—knochen wurm), there are included not only instances of actual farcy, of scrofula and sarcoma, but also those of actinomycosis. He further regards it highly probable that the latter disease is likely to represent some of the cases of farcy or glanders in man.

The frequent occurrence of the disease in cattle gave Ponfick numerous opportunities and obvious advantages in its study. The various stages could be obtained at will, and both tissues and fungus could be examined in the freshest possible condition. He was enabled to discover that the internal organs of cattle might be affected, as was the case in man, and in the course of his investigations he learned that swine as well as neat-cattle might suffer.

The chief advantage, however, from the study of this disease in animals, lay in the opportunity afforded for experiments with reference to the possibility of transmission, and the search for channels through which such might be accomplished. A very detailed account of the results of these observations and experiments is given, but it obviously far transcends the limits of a brief review to enter into the minutiæ of such studies. It is undoubtedly preferable to call attention to their having been made with all the accuracy and completeness which characterize the stand-point of experimental pathology at the present day. The author's reputation is so well established, and his character so well known that there can be no question of the thoroughness of his work and the truth of his statements.

Without claiming the possession of any special training as a mycologist, Ponfick has devoted a great deal of skilled talent as microscopist and experimenter with reference to the structure and manner of growth of the actinomyces. With the critical employment of the various methods used in histological investigation, he has described and delineated, with the utmost attention to detail, the various appearances presented by the fungus. His observations control and generally corroborate those of Harz, whose studies of the structure of this organism are received as the only contribution in this direction of an expert. At the same time Ponfick has submitted the results of his observations to the judgment of eminent botanists, and states that they and Harz agree that the growth in question is a fungus, and probably a mould. Its form, however, differs so widely from that of all other known fungi that it is, at present, impossible to include it in any of the existing varieties. Even the attempts at cultivation throw but little light on its classification. Harz infers from his studies in this direction, and the microscopical appearances of the plant, that it represents a stage in the development of a higher fungus. Nevertheless, he admits that the historical development of the latter is not yet determined, although it is considered that such a fungus may be closely allied to, or even identical with, some known variety.

Ponfick's experiments in cultivation were made in various animal and vegetable soils, including the use of gelatine as recommended by Koch. He observed numerous appearances, which would assist in building up the biological history of the plant in question. He, too, finds that all the links in the chain are not present, and he therefore hesitates in adding another to the views already advanced by Harz, Israel, and Johne. He calls attention, however, to certain appearances, seen by himself and other investigators, which may be of value in future studies. These consist chiefly in resemblances to well-known fungi, and to the presence of fungi in lachrymal concretions and in the crypts of the tonsils of man and of swine, which bear a close likeness to the actinomyces, and suggest transitional forms.

Although the botanical position of the actinomyces and its relation to known fungi are still to be determined, the experiments with regard to the pathogenic properties of the organism were far more positive. Ponfick maintains that wherever, in this disease, the characteristic products of the new formation are present, whether as purulent inflammation, granulation tissue, or tumours, they are always accompanied and actually produced by the presence of these bodies. The disease progresses as the organisms grow and propagate.

The association of the diseased conditions and the fungus suggests such a view, but the experiments in inoculation, made independently by Johne and Ponfick, prove it to be true. Ponfick's early experiments were made on dogs and rabbits, and were uniformly negative. Experiments made on cattle, however, showed that when tissues containing the fungi, or, as Johne found, the isolated fungi, were transferred from diseased to healthy animals, either into the subcutaneous tissues, the abdominal cavity, or the bloodvessels, an independent growth of young, typical tumours, containing the fungus in an active state, arises in the course of one or more months.

In the clinical history of mild cases of actinomycosis in man there first appears the gradual development of a more and more distinctly fluctuating swelling, usually near the angle of the lower jaw. After some weeks or months the swelling commonly extends downwards along the sterno-mastoid muscle rather as a growth than a gravitation, and frequently presents a nodulated character, suggesting enlarged lymphatic glands. When this growth is cut into it appears as a spongy, flabby granulation-tissue, from which a few drops of thin, pale, serous-like fluid may be squeezed on repeated pressure. In this fluid are found the peculiar sulphur-yellow granules, whose presence is pathognomonic of the disease. During the progress of the swelling there are no local or general symptoms, neither chills nor fever.

In cases terminating fatally the disease pursues a more protracted course, extending over months or years.

Although a painful swelling of the jaw may be the earliest symptom, most of the fatal cases began with signs of a left-sided pleural irritation. The pains might subside, but would recur with increasing severity, and were finally associated with decided inflammatory characteristics. The inflammation affects the lung and pleura, or is manifested by cold abscesses opening externally, and communicating with each other subcutaneously by numerous branching fistulæ and sinuses. These fistulæ present irregular external openings, surrounded by a border of flabby, livid, pointed bits of skin, and are continued into a labyrinth of canals, extensively invading the soft parts. The fistulæ and canals are lined with pale, soft, and flabby granulations, sprinkled with yellowish-white spots. They are associated with a costal or spinal caries, and the latter may be suggested by the presence of a psoas abscess. Every chronic suppuration, therefore, in the left lower dorsal and pelvic regions is to be looked upon as the possible result of an actinomycosis. Even in the chronic cases the absence of fever is notable, although rare attacks of high fever may exist when a pleurisy, pericarditis, or peritonitis arises. These inflammations are circumscribed, however, and soon subside. With advancing emaciation and exhaustion, no relief following the external openings, the patient eventually falls into a condition of fatal marasmus, which may be accompanied by amyloid degeneration and dropsy.

The disease advances continuously into adjoining parts, and invades the bones at the base of the skull, as well as follows the course of nerves, even as far as the brain. In its course downwards the spine and ribs may become involved, also the larynx, œsophagus, lungs, diaphragm, spleen, left kidney, and left lobe of the liver. It is probable that the disease may also be disseminated in other ways; through embolism, for instance, the growth having been found penetrating a vein, and nodules being observed in the walls of the heart and in other remote organs of the body. It is likewise probable that the inhalation of particles into the bronchi may occasion the formation of tumours in the lungs. In the several metastases the fungus is found, and the nodules resemble in their gross appearance the visceral gummata, resulting from syphilis.

The evidence relating to the method of origin of this disease is in favour of its being intimately connected with vegetable food, as carnivora are exempt, and the earliest symptoms, in mild cases at least, are observed in the immediate vicinity of the mouth. Johne has frequently found bits of food coated with actinomyces in the tonsils of swine. This fact is of less value in etiology, as but few cases among swine are thus far reported, while in the numerous cases among cattle the fungus has not been found in the tonsils or teeth.

The view that the mouth is the most frequent channel for the admission of the fungus is supported by the occasional presence in the tonsils of healthy individuals of peculiar clumps, suspected to be early stages of the growth. The discovery of the fungus in carious teeth, already referred to, gives additional evidence in favour of the introduction of the disease by the mouth.

At the same time another factor than the presence of the fungus is also necessary, for the latter may be present and the individual be healthy, while the patient may be diseased, although the teeth and tonsils are free from the organism. This second factor, to which Ponfick calls attention, is a lesion of continuity. An opportunity being thus afforded for the entrance of the fungus into the tissue, its growth may be continued, as in the experiments on cattle above referred to. It is quite possible that the organism may be admitted from other parts of the surface of the body than the mouth; for one case is recorded where the disease apparently arose from a wound of the thumb. This view is further supported by the prevailing belief among veterinary surgeons that farcy buds occasionally grow from without inwards; the contagium in such cases is presumably inoculated into tissues laid bare by frequent or violent rubbings of the animal against its stall.

There is no evidence, thus far obtained, which suggests a transmission of the disease from animal to man, or from man to man. That such a transfer is not impossible is manifest from the experiments on animals.

It is obvious that the prognosis of this affection is dependent on the extent of the invasion of the deeper tissues. Relatively favourable so long as it is limited to those parts accessible to the surgeon's knife, it becomes the more unfavourable the further in the advance. When the bones and the deeper parts of the neck are reached, the prognosis becomes fatal.

The treatment is based essentially upon what has been stated with reference to the cause, its probable origin, and its evident means of approach to the various parts of the body. Preventive measures can accomplish but little till more is known with regard to the home and life of the fungus outside the animal tissue, and with regard to those conditions outside the body which favour its growth and propagation.

Now that the disease is known to be frequent among cattle, and a rapidly increasing foe to man, it behooves all physicians to bear its existence in mind, and to familiarize themselves with its features. From the history of its prevalence in certain parts of Europe, it is more than probable that, especially in those sections of this country where cattle abound and represent the chief industry, the actinomycosis of man and of cattle may become prominent as a distinct disease to be recognized and to be overcome. R. H. F.

ART. XXV.—*Eczema and its Management. A Practical Treatise based on the Study of Two Thousand Five Hundred Cases of the Disease.* By L. DUNCAN BULKLEY, A.M., M.D., Attending Physician for Skin and Venereal Diseases at the New York Hospital, etc. etc. New York: G. P. Putnam's Sons, 1881.

TREATISES and monographs upon diseases of the skin have of late become conspicuous in the list of American medical literature. Dermatology, as a worthy specialty of general medicine, has been pushed forward with much zeal during the last decade by a number of able observers in different parts of our country; as a result of which we find the subject justly taking its place by the side of gynecology, ophthalmology, and other specialties. It is not too much to say that in no department of medicine has more good work been done and greater progress in pathology and therapeutics been made than in diseases of the skin. The advances have, indeed, been remarkable. In proof of this statement, we have to offer such admirable volumes as the one under consideration, which reflects credit alike on the author, the profession, and medical literature. It is in the production of works of this kind—able monographs, rather than general treatises—that our knowledge of special diseases is really enhanced. Treatises and systems at the best can give but a general idea of the subject. It is to elaborated articles and to brochures that we must look for personal experience, for unusual or rare forms of disease, and for detail—material, as an author soon finds out, too bulky to be included in the ordinary-sized volumes of the day.

The author of the work before us is well known as one of the most active and prominent dermatologists of our country, whose large experience entitles his opinions to respect and careful attention. As a writer, Dr. Bulkley is equally widely known; his contributions, for the most part of a practical character, having been numerous. The aim of the author, as stated in the preface, has been to present the general practitioner with as clear a guide as possible to the recognition and management of eczema. The book is made up largely of personal experience, there being but few allusions to the opinions and statements of other writers, although in a general way the author acknowledges the assistance derived from the prominent writers of the day.

Eczema is defined "as a non-contagious inflammatory disease of the skin, of constitutional origin, acute or chronic in character, manifesting many or all the results of inflammation at once or in succession, and accompanied by burning or itching." Owing to the multiform and protean character of the disease, its definition becomes a difficult problem; one which has never been solved to the satisfaction of all, and probably never will be. Much depends upon the stand-point of the observer, whether this be clinical, etiological, pathological, or a combination of several or of all. The definition given by Dr. Bulkley strikes us as being too broad to convey a clear idea of the disease to the reader, supposing that he had never seen a case of eczema. We doubt whether he would be able to make the diagnosis. The usual primary lesions, which are tolerably constant, are ignored; nor does there occur any reference to the pathognomonic feature of infiltration, which it seems to us is such a characteristic symptom as to be worthy of special mention. The words "manifesting any or all the results of inflammation at once or in succession," while in the main true, are not strictly so; for from this it would appear that eczema was capable of manifesting itself in the form of any other disease of the skin; as, for example, erythema multiforme, herpes, or pemphigus. In the present state of our knowledge it does not seem wise to totally ignore the old landmarks, the primary and secondary lesions, without which definitions of skin disease would be too vague to be of practical value. That the author, however, is fully cognizant of the lesions and the course of the disease, is shown by the following *résumé* of the process:—

> "The earliest local phenomena being nerve and capillary disturbance, the process may remain in the erythematous stage, and the skin lesion be aborted, as far as relates to its active increase, and the threatened eruption subside without further advance. Or the capillary dilatation may continue, a certain amount of fluid may transude and become organized, and the chronic erythematous eczema result. Or, there may occur so much exudation that vesicles are formed, and when these rupture a peculiar glairy fluid exudes, which stiffens linen, and tends to dry into scales and crusts. If the inflammation is less active, only papules are formed. In the more chronic cases the exuded fluid does not reach the surface, but is retained in the meshes of the skin, and, becoming organized, constitutes what is known as the infiltration or thickening of eczema, which may then crack and give fresh distress."

The picture gives a good idea in a condensed form of what may be termed the clinical pathology of the disease.

A point of much importance, it has always seemed to us, is the differentiation of eczema from other cutaneous inflammations resembling in the character of the lesions this disease. Eczema we have always held to be a disease *sui generis*. Simple inflammations of the skin, tending to spontaneous recovery, are likewise to be viewed as having a history of their own. Upon this subject the author speaks clearly and wisely when he says:—

> "It is also to be remembered that although eczema differs from ordinary inflammation of the skin, or dermatitis excited by local irritants, it is often very difficult to distinguish between the two early in the attack. Pediculi upon the scalp give rise to an irritation which induces scratching, and an artificial eruption is then set up, composed of pustules and raw points covered with crusts, which often closely resembles a pustular eczema of the scalp. *But the former eruption is not eczema, it is simply a dermatitis depending wholly on the local cause of the pediculi*, and disappearing entirely when they are removed. The same is true in regard to eruptions caused by body lice and pediculi pubis, also of the eruptions seen in scabies. Other agencies may likewise cause inflammation of the skin which may closely resemble that of eczema; such are heat and cold, animal poisons; also such vegetable matters as croton oil, savin, poison ivy, and arnica, together with mineral substances, as tartar emetic, aniline dyes, etc. Although these eruptions are not eczema, *they may become the starting-point of true eczema*, which may then remain, and relapse again and again without recognizable local cause. Eczema, then, is not purely a local disease of the skin, but is a state or condition of the system of which the skin lesions are the outward manifestations, as joint inflammation is one of the indications of the gouty state."

The italics are our own, and have been used because we desire to bring forward those views of the author which we regard as most important and as correct. As is well known, they are quite at variance with those of the majority of German pathologists, who consider all of the several manifestations cited as eczema. That the two affections are often complicated, no one would deny, but that every inflammation accompanied by fluid or plastic exudation caused by local irritation is an eczema, cannot be accepted. Close clinical observation will never, we think, establish this, and upon this ground we are pleased to find Dr. Bulkley taking a firm stand.

Concerning the frequency of eczema, the author's statistics, founded upon experience in New York, seem to agree closely with those of Wilson in London and of Anderson in Glasgow. In a total of 7300 cases of miscellaneous skin diseases there were 2500 cases of eczema, or a percentage of 34¼. In the author's experience, the percentage in dispensary and in private practice is nearly the same. The disease may therefore be regarded as forming about one-third of all cases of skin disease encountered. The frequency of the disease varies, however, in different countries, and moreover in different cities of the same country. Thus we would venture the opinion that the proportion of eczema to other diseases of the skin is greater in Philadelphia than in New York.

The author considers the etiology of the disease very fully, and, we think, satisfactorily. In this connection it may be stated that he has very little belief in the heredity of eczema as a disease, although the habit or condition which predisposes thereto, namely, the gouty, strumous, and nervous states, may be and undoubtedly are transmitted. According to his experience, but a very small proportion of the cases, even in the higher ranks of private practice, show any strong evidence as to the heredity of the disease to any degree.

We next encounter a chapter devoted to the symptoms of the disease and its pathological anatomy. The symptoms are arranged under six heads, considered, as he states, in the order of their importance, which, he adds, happens to be also the order of their pathological sequence. They are: (1) itching; (2) redness from congestion; (3) papules, vesicles, pustules, or exudation; (4) crusting, or scaling; (5) infiltration, or thickening; (6) fissures, or cracks. Upon the subject of the pathological anatomy of the disease, our knowledge, we think, has been advanced but little of late years, notwithstanding that researches have been carried on by numerous observers. Dr. Bulkley gives a full *résumé* of this question, but does not contribute any original studies. The microscope as yet fails to show the distinction in the tissues between eczema and other forms of similar inflammation.

The nature of the disease is next ably considered, the author at the outset expressing himself strongly in favour of its constitutional origin. He adds, very justly, that the local pathology of eczema has rested largely on three grounds: first, on the results obtained in its local treatment; secondly, upon microscopical researches in histology; and, thirdly, on a clinical and microscopical study of the artificial eruptions produced by irritants, as, for example, croton oil. This question has already been touched upon in the review, and, interesting as it is, we cannot further dwell upon it, but beg to commend its consideration to the reader. We entirely agree with the author when he says that great error is committed by those who look only or mainly at the local causes, and argue therefrom a local nature for the disease, forgetting the established principles in general medicine in regard to predisposing and exciting causes. The impossibility of producing eczema artificially in a person not subject to the disease, is well known, and we think offers proof of the author's position on this point.

Decidedly the most interesting, original, and valuable portion of the book, is that about to be referred to on the causes of the diseases. They are considered appropriately under the two heads of predisposing and exciting causes. And here it may be stated, that although commending the chapter as a whole, there are many questions upon which we think the author expresses himself too positively. Thus, the observation that "careful and repeated study of patients with eczema will always reveal that they are not in perfect health," is one which would by no means be accepted by the profession. That they are not infrequently in a state of deranged general health no one would probably deny, but that such is always the case seems an unnecessarily positive assertion. The subject certainly admits of discussion. Again, the author considers the state of the circulation to be frequently deranged. He says:—

> "The pulse of patients with eczema rarely represents that of health, and may be variously abnormal. It may be very sluggish in those of a bilious state, and I have observed it below fifty in the minute, rising to normal frequency when this condition was removed. Far more frequently it is found to be unnaturally frequent, and may range very high from debility or neurasthenia, gradually returning to a standard of health under the treatment which cures the eczema. It is almost always weaker and more compressible than in perfect health, although occasionally, in apparently robust subjects, especially in more acute cases, it may seem to be full, and may even be throbbing. In these latter cases this is found to be the result of an unnatural heart stimulation by an overloading of the circulation with effete products, resulting from imperfect assimilation and disintegration."

We have quoted the author at length, because the views expressed are strikingly novel, and we think may be challenged. To bring forward such views, which, it need scarcely be remarked, are altogether at variance with the observations of other dermatologists, without full explanation, seems to us to be courting severe criticism. It would certainly have been interesting had the topic been discussed, with statistics, and with the forms of the disease in which are found circulatory disturbances. for we cannot think that the statement applies to all forms and varieties of eczema.

According to the author, three classes of subjects present themselves with eczema: first, those with the gouty state; secondly, those exhibiting some of the elements grouped under scrofula or struma; and thirdly, those manifesting symptoms referable to the nervous system, constituting the neurotic state. It is, however, by no means asserted that sharp lines separate these groups; on the contrary, they frequently merge, while some cases are with difficulty placed. The value of recognizing these three states rests on the practical basis of therapeutics and prophylaxis. The "gouty state" in eczema next receives attention, and is fully explained, the remarks being, on the whole, judicious and characterized by close clinical observation and by valuable suggestions.

In looking over the chapter devoted to the treatment of the disease, certain points strike the attention, to some of which we may refer. The remarks upon the value of arsenic, a remedy assuredly much abused through thoughtless administration, are clear and conservative. Its high repute in the treatment of the disease is endorsed, although, as stated, it is by no means to be given in every case; the author adds that in his practice it is not used in probably more than one-half of the number of cases treated. "As a modifier of cutaneous nutrition, it is often of value in chronic cases, but used alone and indiscriminately, it may often do harm." The last words, we feel, might be italicized. Caution is given against the employment of the remedy in acute eczema, and further, that its administration should even be suspended during an exacerbation in the treatment of the chronic stage of the disease. It is further stated that the remedy is well borne by children, and instances are quoted where the treatment consisted solely of arsenic in increasing doses, beginning with one drop of Fowler's solution, until two, three, or even ten drops were taken thrice daily.

> "Under this plan the eruption quickly paled in these cases, and soon ceased, with little or no local treatment, and with few, if any, dietetic or hygienic direc-

tions. But I have never felt it wise to recommend this plan, or to practise it very largely, for fear of possible evil results from the free use of so powerful a remedy."

It would have been a valuable contribution to our knowledge of the action of arsenic, if the author had stated precisely what, if any, "evil results" he had encountered. The failures of the remedy in infantile eczema, it may be said, are also briefly referred to.

The chapter on infantile eczema will amply repay perusal and study. In considering the subject of ointments, he expresses the opinion that oxide of zinc ointment and tar ointment are both much too strong in the eczemas of children, and should, therefore, be weakened. Sixty or even thirty grains of oxide of zinc to the ounce, and tar ointment weakened with three or six times of simple ointment, he considers more valuable. We are surprised to hear that "lotions are very little used in infantile eczema;" their value we hold is great in certain stages of the disease, both as antipruritic and as curative remedies. The author seems to regard them as being chiefly useful for the purpose of relieving the itching. The directions for the use of water are admirable, comprising sound advice. As a rule, the less washing the better. When washing is practised, the ointment should be applied immediately afterwards. The value of the mercurial ointments is referred to, preference being given to the ointment of the red oxide, weakened with three times its quantity or more of simple ointment. Nothing is said of the value of calomel, which is so highly esteemed by many; nor of white precipitate, likewise looked upon by some as a sovereign remedy.

The chapter on differential diagnosis we regard as the weakest in the volume. Many diseases which, at times, closely simulate eczema, are, it is true, referred to, but so briefly that the picture is by no means graphic. Thus, the differences between impetigo, impetigo contagiosa, herpes, tinea favosa, lichen ruber, and eczema are unsatisfactory. Other instances might be cited, as, for example, dermatitis exfoliativa, pompholyx, and dysidrosis, diseases liable to be confounded with eczema. The description of universal eczema is likewise meagre.

We have thus endeavoured to bring forward some of the principal points contained in the volume. The subject-matter is presented in an easy style of writing, but assuredly it might be much condensed, there being in many places a good deal of unnecessary repetition. The book is singularly free of quotations, Hebra being about the only author who receives full credit for his work. This we regard as an error of judgment on the part of the author, for there has been excellent special work done of late by dermatologists in this country and abroad, which, in a comprehensive treatise like the present, is entitled to the heartiest recognition. It is, however, on the whole, an admirable treatise on the subject, and can be cordially recommended to the general practitioner.

L. A. D.

Art. XXVI.—*The Science and Art of Midwifery.* By William Thompson Lusk, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children in the Bellevue Hospital Medical College, etc. With numerous illustrations. New York: D. Appleton & Co., 1882.

At a recent lunch-party at a club, noted as a gathering-place of medical men in New York, the gynecologists, by a sort of mutual consent, prevailed and gave tone to the conversation. Among the topics brought up was the need of a new American treatise upon obstetrics, and who, among the men noted in literature, was the most likely to produce one worthy to fill the vacant place. Any one who is familiar with gynecologists will be prepared to hear that no agreement was reached. The conversation is alluded to as showing that among those who teach and study gynecology and obstetrics, there exists a feeling that we are not represented worthily in this department of medicine. Why this state of things exists, while medical literature in every other department is teeming with exuberant life, is a difficult question to answer. In other branches of our literature, but a single parallel instance exists, not from want of candidates for the vacant place, but from the light standard of criticism, that makes success nearly impossible. And why may we not adopt the latter as an explanation of the need that the gynecologists with more or less justice complain of? If we express this literary want numerically, we shall see that it is more apparent than real. In this country in the year 1880, we had nine obstetrical publications in the form of books, which, considered in a quantitative way, must have more than equalled any demand that obstetrical science or art could have made upon literature. While, then, we cannot say that obstetrical has not equalled, relatively in quantity, the more active and enticing gynecological literature, we may assume that it does not comply with a severe standard of criticism. This is partially confirmed by the fact that in Great Britain and Ireland, where the standard of merit in obstetrical literature is raised even higher than in this country, we find only five books of this class published in the same year. In Germany we have nineteen books upon obstetrics, and in France fifty-one for the same period. It appears to follow that this class of literature multiplies just in proportion as the critical standard is lowered, for in France, where such abnormal activity exists, but little original work is done in this department, and the literary work is sadly deficient in merit. As a matter of fact, much of this excess in French obstetrical literature is due to the rivalry existing between professors and competing clinics.[1] This class of work seems to be, among English-speaking people, under a healthful restraint. Men hesitate to risk their reputations upon a formal obstetric treatise. Where much is demanded, there is a natural reluctance to offer, especially, as in this case, in view of the severe labour and difficulties of the subject, a man offers his all. A man ages at once when he has given to the world a volume upon obstetrics. However young he may be, he becomes old when he has completed his life-work. He has but one trial, and he either succeeds or fails. If he is wise he reverses the order; he may write a book upon gynecology, and if he fails then, he may solace himself with the thought that he has obstetrics left to redeem his literary fortune. It is not in the order of nature as exemplified in this field of human effort that he can fail to meet the severe critical standard in the first, and claim the reward of posthumous fame in the second.

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[1] Obstetrical and Gynecological Literature, 1876–1880. By James R. Chadwick, M.D., Boston, 1882.

A work upon obstetrics ought to be the sum and crown of one's life, medically speaking. Ripened experience, study, practice, and the calm critical spirit of age, are the only sure foundations upon which to rear such a literary work as this. The names of men most familiar to the tongues of students and practitioners to-day, among those long since departed, are those of great obstetrical writers.

By the expected American work on midwifery is not meant the great masterpiece, but a book that will compare favourably with the state of literature in other departments of medicine, notably that of practice of medicine, physiology, surgery, and gynecology. In midwifery we have had one such book, now a generation old, but as fresh and as often quoted as though from a living hand. It is in this sense that gynecologists stand expectant, awaiting the coming book,—an expectancy born of a numerous succession of failures. There is danger, also, that having settled our canon of taste by the really brilliant treatises upon gynecology, we have raised the standard too high for the sister department of midwifery.

Another reason for the present state of obstetric literature in this country lies in the number of rival schools of medicine, and by some strange law, the working of which is past finding out, the obstetric professor feels called upon to produce a volume. The result is a large number of low grade books upon midwifery. From Maine to Oregon this literary law has been in force for the last fifteen years. With this multiplicity of schools, we have no great centres of obstetric teaching that will at all compare with the Prague, Vienna, or Dublin schools. From centres such as those have emanated settled methods of procedure that have guided thousands of medical men throughout the world.

Turning now to the state of our monographic and periodical literature, which is by far a better index of the condition of obstetrical literature than the ponderous treatise, let us inquire if it meets the demands of competent compilers. Taking Dr. Lusk's new book as a test of the material which he judges necessary for his work, we find that he has availed himself of American material in only 82 references, as indicated in the foot-notes; and he has borrowed from German authors 652 separate citations, indicated in the same way. By reference to Dr. Chadwick's interesting paper again, we observe that America produced 498 obstetric papers, and Germany 170 in the same year. If we judge of the quality of this great mass of native material by the use Dr. Lusk has made of it, the conclusion is forced upon us that the majority is worthless for scientific purposes; or, Dr. Lusk is possessed of a personal equation, as the astronomers call it, that alone will explain his strong bias toward German literature. While the disproportion between the use Dr. Lusk has made of German and native material cannot be taken as indicating the actual scientific value comparatively of the one over the other, yet it in a measure expresses the truth. A large amount of American periodical literature upon this branch cannot be used as scientific material, and mainly for the reason that a large proportion of these articles scattered through a great number of obscure medical journals, express matters of opinion rather than fact, and as such are of no use to the scientific compiler. Notwithstanding this superabundant obstetrical literature, it does not represent an equal amount of original labour. The healthiest sign is, that this excess of periodical literature has raised our standard of excellency high in proportion, and given us a class of readers capable of applying this standard.

Dr. Lusk's book conforms in general arrangement to the conventional manner. He begins with the female organs of generation, development of the ovum, of the fœtus, and at the 82d page settles down to the theme of the volume. The only objection to be made against the author's anatomy is in reproducing the old and nearly abandoned pelvic section, in which the rectum and bladder are represented in a distended condition with the uterus lying between them, and in the illustration in question, the departure from the true condition of things is still further exaggerated by following the scheme of Kohlrausch in which the uterus is represented in a retroverted condition. After the careful work of Schultze and Alexander Simpson upon this point of anatomy, it is not a little singular that such an antique model should have been followed. While the first two chapters are generally the introductory portions of a treatise upon midwifery, still we think that the book of the future will appear without an introduction of elementary anatomy. Some things must be taken for granted by the writer of every text-book, and no assumption seems a safer one than that the reader understands the outlines of anatomy. A short and very practical chapter on the management of pregnancy is given. In pregnancy nausea and vomiting the usual and routine treatment is given, while the author is non-committal upon dilatation of the cervix, which has the enthusiastic endorsement of Sims. The frequency with which premature labour has followed puncture for œdema of the extremities has fixed the attention of the author. The physiology and mechanism of labour are given closely united with the anatomy of the soft and hard parts of the pelvis, and of the fœtal head, and is a very clear and concise exposition of the subject. The understanding of the matter is greatly aided by the very realistic cuts copied from Schultze, whom the author closely follows. In face presentations the author recommends the manipulation of Schatz, which consists in restoring the normal attitude of the body by flexing the trunk upon itself by external manipulation. The manœuvre seems a very practical one, and may bear excellent results. In the conduct of normal labour considerable attention is given to the preservation of the perineum; but we notice an absence of any attention to preserve intact a sister part —the margin of the cervix. Useful remarks are made upon tying the cord, the physiology of the placental circulation being the basis for a conclusion in favour of late ligation of the cord, while the practice of employing uterine expression previous to tying the cord is condemned.

The author is outspoken in favour of anæsthetics in midwifery, but is "certain that those who use chloroform habitually will find themselves compelled to resort to the forceps with somewhat increased frequency." In speaking of twin pregnancies, Dr. Lusk says, "twins from the same ovum are always of the same sex." There is about it simply this dogmatic sentence, nothing more. There is not a reference to an author who has approximated a demonstration of the fact, and it is not capable of clinical proof. The quotation is made as an example of quite a number of magisterial assertions that are out of place in a scientific book.

The section upon the physiology and management of childbed is an exceedingly good one. A temperature of 100½° is regarded as normal for the first six days, with morning remissions and evening exacerbations. The only criticism to be made upon it is that the part devoted to artificial feeding is not sufficiently full and explicit for the guidance of the inexperienced practitioner. There is no doubt that among native women, the necessity for artificial feeding of babes is on the increase, while the country is flooded with patent foods, and the pages of our best medical journals teem with the advertisements of preparations that are worthless, or poisonous to the new-born child. Under these circumstances this topic ought to be treated thoroughly and carefully.

The portion of the book devoted to the pathology of pregnancy is exceedingly elaborate and good, and forms quite a feature of the book. For the treatment of extra-uterine pregnancy the author recommends the faradic current during the first three months of pregnancy continued daily for one or two weeks, until shrinkage of the tumour proves the death of the fœtus. Primary laparotomy (during the life of the child) does not meet with the approval of the author. Parry's frequently quoted table of twenty cases of this operation and the saving of six mothers and eight children ought to be reduced to the saving of but one mother, by the elimination of five of the reported cases. In all, Dr. Lusk states, there are twenty-four authentic operations and the recovery of but one mother. On the contrary, secondary laparotomy, "as distinguished from that performed during the life of the fœtus, has been such as to warrant its being placed in the category of justifiable operations." He advises that operative measures be delayed, if possible, until the maternal placental vessels are obliterated.

Obstetric surgery includes the induction of premature labour and abortion, the forceps and manual extractions, craniotomy, and embryotomy. The only feature worthy of mention in forceps delivery is the axis traction forceps of Tarnier, the only form of which is figured is the author's modification. One of the best portions of Dr. Lusk's book, we think, is that given to the employment of the forceps, which is the most direct and simple of any recent work we remember to have seen. It strikes us that the author might have gone more largely into the subject of external palpations and manipulations for the corrections of mal-positions, to the advantage of his book; the only one recommended is that of Wigand (1807). Mundé's elaborate paper in the *American Journal of Obstetrics* (1880) shows the wide field of usefulness that lies in this direction, and so little is known of it generally among practitioners that a formal treatise ought to give a practical *résumé.*

The part of this section most interesting to the readers of a review article is that devoted to a consideration of the relative merits of the operations of Porro and Thomas. No history is made so slowly as surgical history, in the sense that an event in surgery is not completed until its status as to usefulness and justification is fixed. In this relation it is too early in the history of these operations to reach a conclusion. These operations following the rather bad showing of the classic Cæsarean section, as to the saving of maternal life, are placed in vivid contrast with the latter. Porro's operation is clearly described, and Laparo-elytrotomy is given in the words of Dr. Garrigues's excellent article.[1] Of the latter operation the author says:—

> "The results present scarcely a parallel in obstetric surgery. They ought certainly to inspire the profession with a confidence at least equal to that enjoyed by the rival procedure of Porro. The question to be decided in the future is as to how far laparo-elytrotomy is adapted to general usage. It is possible the

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[1] N. Y. Med. Jour., Oct. and Nov. 1878.

successes so far obtained have been largely due to the exceptional merits of the operators who have undertaken it. With the present experience it would seem as though it ought to receive the preference in all cases where the dilatability of the cervix is such as to allow delivery by the forceps or version, after the artificial passage has been formed, to be accomplished with ease and celerity."

Upon Porro's operation, the author's comment is: "The chief merit of the method of Porro lies in the fact that each step in the operation is capable of human control, and is capable, therefore, of human improvement." We fancy that the author's meaning in this last quotation is that the uncertainties of hemorrhage, of difficult delivery, and of anatomical variations that render laparo-elytrotomy difficult to the general operator are not met with in Porro's method, which is reduced to the simplicity of an amputation. It is not so much the merits of Thomas's operation as a scientific procedure over that of Porro, that is to fix the relative status of these operations, but the readiness and confidence which the average practitioner will feel in the method he is called upon to select in the haste that usually attends these emergencies. In the section upon the pathology of labour the author deserves public thanks for his note upon the use of ergot on p. 428. He confines its use to the treatment or prevention of *post-partum* hemorrhage, and under no circumstances would employ it to expedite a labour, when the os uteri is "dilated, or dilatable," as some of the older writers have it, and, which we are sorry to say, is quite a general practice among American practitioners. For this purpose the author recommends quinia.

The chapters upon pelvic deformity form a commendable portion of the work. The grounds upon which the author advises the different obstetrical operations to overcome the obstacles to delivery are well chosen, and conform to the usual teaching upon this subject. We think that the author is mistaken in his explanation of the rarity of abnormal pelves among American women; we do not think that this is explained by the statement that the cases are overlooked, as the author has it, but rather by the fact that deformed native women rarely marry. There is, probably, no race in the world upon which conventionalism exerts a greater restraining influence upon marriage. Deformity of any kind amounts almost to a bar to matrimony. A short chapter follows upon abnormalities of the sexual organs, and another upon those of the fœtus, and in the latter spontaneous version and evolution are described. In the chapter upon eclampsia, the author is surrendered to the uræmic theory of etiology. For the treatment, he is a strong advocate of bleeding, which we think is a movement in the right direction, but his advice upon the employment of morphia does not conform to what has been established by excellent observers. From one-sixth to one-fourth of a grain hypodermically would rarely succeed in quieting the convulsive centres. One grain to one grain and a half at a dose we have seen given with the result of ending the convulsions. Morphia seems to be tolerated to a remarkable degree. For convulsions during pregnancy, the author advises the induction of abortion, as the practice of waiting until the completion of gestation has proved uniformly disastrous at his hands. Post-partum hemorrhage, placenta prævia, and inversion of the uterus follow, and give a fair idea of the accepted rule of practice in these conditions.

The two chapters upon puerperal fever are the best and most carefully written of the book. The author is surrendered wholly to the germ theory. Aside from the fascination that a theory formulated from tangible proof has upon the scientific mind, and thus stimulating one to further inquiry, the germ theory has one never-failing practical result when applied to puerperal diseases, and that is clean midwifery. These two chapters may be regarded as written in this holy cause. All the difficulties in the way of explaining the kinship between erysipelas and puerperal fever disappear at the touch of the germ theory. Cukowski could at will cause erysipelas by fluids containing micrococci. The author says: "Thus we find in surgical fever, in puerperal fever, in diphtheria, and in erysipelas, the presence of a common element which links them together, and which establishes the relationship which has long been recognized as existing between these various processes." In the prophylaxis of this disease, the following rules, which the author gives, are the natural outcome of his theory: 1. Prevent the introduction of the germs (antisepsis before confinement). 2. Paralyze their action (antisepsis after confinement). 3. Shut up the doors—veins, lymphatics, and Fallopian tubes (employment of means which promote uterine contraction).

In the matter of treatment we think that the author's extreme caution in the employment of intra-uterine injections of antiseptic fluid is uncalled for. During a debate in the American Gynæcological Society at Baltimore, we noticed that intra-uterine and vaginal irrigations with antiseptic fluids were generally employed with excellent results. In the use of Kibbie's fever-cot for topical antipyretic treatment of puerperal fever, the author states that he has made a good many trials of the method, "and has not found that it agrees with all in an equal degree. In some instances the effusions have been followed, in spite of hot bottles to the feet and the administration of stimulants, by such a degree of depression and impairment of cardiac force, that it has been necessary to discontinue them."

A very short chapter upon puerperal insanity, phlegmasia alba dolens, and diseases of the breast concludes the volume.

The impression produced by Dr. Lusk's book, as a whole, is one of painstaking, conscientious research. He has not shirked the great labour of going to original sources for his material. He has laid open to American readers the great store-house of German obstetric lore. No one can read his book and doubt his industry, or find fault with his judgment when he speaks for himself. That he has avoided the embarrassment of riches cannot be said. The profusion of literary material at his command throws upon the author the responsibility of striking a balance between conflicting opinions and so-called facts. He is bound to do this. He occupies a judicial position, as it were, and after mustering his great array of witnesses by book and page into his volume, he must decide for his jury of readers which is the better thing to do, or to believe. His readers cannot see behind the reference the finer meaning of the author cited. For these subtle shades of truth, the reader must trust to the compiler. The young reader will feel this as he turns to Dr. Lusk's book. The work is one that will be subject to frequent quotations, more we think for the sake of its references than for the original views of the author. We do not wish to be understood as insinuating that Dr. Lusk has surrendered his individuality. He has drawn liberally upon his considerable experience, but from the great mass of material with which this is surrounded, his own originality as a factor in the volume is obscured. Dr. Lusk's book is so rich in German references that it is well worth translation into German for the purpose of informing the young student of that nation of his own literature. Is it the American obstetrical work for which we have all been waiting? We think not; but we have no great school to represent. We cannot demand originality when we have no source of originality; no great central school or system that produces an exponent. As a nation of thinkers and literary workers, we are a divided people. We are too active, too independent in our egotism for any one man or class of men to so group principles and facts as to found a school of opinions and practice. But there is no need of this. Science is cosmopolitan, not local. Broad then, in this sense, is Dr. Lusk's book; and we must say that he has succeeded fairly well.

The volume is illustrated richly and in a superior manner, and its make-up is creditable to the publishers. E. V. de W.

ART. XXVII.—*A System of Surgery, Theoretical and Practical. In Treatises by Various Authors.* Edited by T. HOLMES, M.A., Cantab. First American, from Second English Edition, thoroughly revised and much enlarged. By JOHN H. PACKARD, A.M., M.D., assisted by a large corps of the most eminent American surgeons. In three volumes. Vol. II., pp. 1063. Philadelphia: Henry C. Lea's Son & Co., 1881.

THE second volume of *Holmes's Surgery* opens with articles on Diseases of the Eye and Ear. We presume these are a necessary part of comprehensive works, such as a "system" of surgery is intended to be. The diseases of which they treat have become so completely the property of specialists, that it would seem no more than proper to diminish very considerably the space which they occupy in the present work, and confine their scope to the description of those diseases with which it is necessary for the general surgeon to be familiar.

Mr. Durham's article on diseases of the nose is edited by Dr. J. Solis Cohen. It contains a great deal of interesting material, but we cannot avoid expressing the feeling that the opportunity which exists in this special field of surgery for a "first-class" article, such as might have been written by an experienced hospital surgeon, has not been seized. Deviation of the septum is an interesting topic which hardly receives adequate attention, but the advice given to abstain from operation we think good; none of the numerous operations which have been proposed for its relief have commended themselves to our judgment. There is the disagreeable possibility of transforming a discomfort into a discordant deformity by producing a slight nasal tone to the speech. Patients are chiefly disturbed by the fear that there may be a polypus, or that the distortion of the nose will become greater. The mind being set at ease on these points, they are usually content to leave matters as they are. The treatment of nasal polypi is in keeping with modern views; and the account of naso-pharyngeal polypi is fair, but a great deal remains to be said about the various operations for their removal. Langenbeck's admirable osteoplastic resection of the upper jaw, by which it is swung over on to the opposite cheek, and the numerous ramifications of their truly polypoid structure completely exposed, is not mentioned, nor does the work of American surgeons, as Cheever and others, receive notice.

Diseases of the Tongue, by Holmes-Coote, is ably revised by Dr. Charles McBurney, to whom we are indebted for many odd bits of information concerning this organ, such as elephantiasis, tubercle, and tumours other than cystic, of which there appears to be quite a variety. Of the tuberculous ulcer, he says: "Early excision of the diseased part is doubtless the best treatment. The wound left heals rapidly, and though the patient cannot be expected to overcome the general diathesis, yet he may, through operation, be spared much pain, and life may be prolonged." The different varieties of sublingual cysts are carefully unravelled by the editor. The specific affections are also given clearly in a few comprehensive sentences, and the closing remarks on operations upon the organs are among the best we know. The method of Professor Kocher, of Berne, of removing portions of the tongue, particularly in cancer, reads well. It consists in taking a triangular flap from the side of the neck, the base being upon the edge of the jaw, and throwing it up on to the cheek: all glands are removed, large vessels tied, and the mouth opened into under the edge of the jaw. Tracheotomy is recommended for most operations upon the tongue; it greatly facilitates the operation, but it should not be forgotten that patients not unfrequently succumb to acute lung inflammations just at the moment when the dangers attending the original disease seem to have been successfully overcome.

Part II. of this volume, devoted to diseases of the circulatory system, opens with a chapter on diseases of the veins by Callender, followed by articles on diseases of arteries by Moore, and aneurism by Holmes, all of which are revised by Dr. L. A. Stimson. Under the treatment of aneurism there are some interesting notes on the use of Esmarch's bandage. The rules for operative treatment are not so clearly laid down as we should wish to see them. The position of the "old operation," as it is termed, or cutting into the sac and tying both ends of the artery, is not given that prominence which it deserves in connection with the only variety of aneurisms to which it is adapted, namely, those of traumatic origin. The methods of treating the varieties of spontaneous aneurism which come under the care of the surgeon are now quite numerous. There is but little choice, however, in the traumatic variety; the Hunterian operation is frequently successful, but quite as frequently it fails to cure, and there is the possibility of being obliged subsequently to attack a suppurating sac. There is also quite a probability that the pulsations may not be permanently relieved. The dangers of a more radical operation are now greatly diminished by antiseptic safeguards, and although Dr. Keyes's case of varicose aneurism, in which this method was employed, terminated fatally, we are inclined to think that he adopted the right course, which we have also recently pursued successfully in a large femoral aneurism of the same variety. Considerable space is given to cirsoid aneurism; but one important fact in regard to this variety does not appear to have been recognized, and one also that usually escapes notice, namely, the direction of the current of blood in the large vessels which are found radiating from the tumour. These are supposed to be afferent vessels, and the deception is natural when some well-known artery is among the number, like the temporal or occipital; in reality, however, the current is reversed. There is little use in attempting to attack the disease by tying these vessels, and the advice given to direct treatment to the central tumour is clearly proper. We take this opportunity to enter our protest against the modern rendering of the good old-fashioned word ligature; "ligation," now largely adopted by American writers, has always seemed to us an unnecessary and somewhat pedantic innovation. We venture to say that it cannot be found anywhere in the original text.

The chapter on diseases of the absorbent system is entirely original, and appears to be a reproduction of the very valuable paper on that subject by Dr. Samuel C. Busey, with which many surgeons and pathologists are already familiar.

The description of apparatus for congenital cleft palate, by Dr. Kingsley, forms an interesting appendix to the article on disease of the teeth. Suersen, of Berlin, has given an impetus to this mode of treatment of the deformity, and the work of our American dentists is so excellent that we are inclined to the opinion that the mechanical treatment will eventually supersede operative measures entirely. Persons afflicted with this malformation may be conveniently divided into the two classes suggested by an eminent surgeon as a basis of classification in club-foot: those that are able to pay and those that are unable to pay. The latter will continue to frequent the hospitals, and will be well satisfied with the improvement bestowed upon them by staphylorraphy, but will be unable to acquire that perfection of speech which the more fortunate fellow-sufferers attain with the obturator.

Under diseases of the intestines, intestinal obstructions are treated of at length, but we do not find mention of the valuable work of Mr. Jonathan Hutchinson, which would have probably been added in an English revision of the subject. His method, which consists mainly in etherization and manipulation of the abdominal contents, has always seemed to us a very plausible, and, we might appropriately add, harmless way of treating this serious affection. In a note to Mr. Henry Smith's article on diseases of the rectum, we notice the statement of Dr. Packard that the ligature and écraseur are considered by American surgeons the best means of dealing with internal hemorrhoidal tumours. Our own experience would not support this view, the results of the clamp and cautery, combined with dilatation of the sphincter, appearing more favourable. This affection suffers generally from a too vigorous surgical treatment. Dilatation alone will often remedy the lighter forms of the disease, but care must be taken not to over-distend the muscle, lest a slight tendency to incontinence may result. In using the cautery also a few superficial applications will accomplish all that is needed, even in the severe forms of the affection.

Colotomy is an operation which is not performed in this country so frequently as in England; possibly there may not be the same necessity for resorting to it; the results are satisfactory, and the reviser justly recommends its use. Extirpation of the cancerous rectum has also been much neglected in the United States, and the papers referred to by Dr. Packard are among the valuable recent contributions to this subject. Our knowledge of hernia has altered but little within ten years, and Dr. Packard therefore finds but little to add to the somewhat elaborate treatise of Mr. Birkett. He wisely remarks: "In the United States a good many operations have been performed by different surgeons for the radical cure of hernia; but it would be difficult, if not impossible, to obtain anything like accurate statistics upon the subject, and especially as to results." For contributions to the treatment of irreducible hernia the editor does not appear to have made a careful revision of home literature. Of Mr. Birkett's work it may be said that, like most other articles on hernia, there appears to be a lack of system in "floating" the subject, which is possibly due to the want of uniformity in English writings in methods of arrangement, and to the enormous amount of literature with which the author of an article on hernia is confronted at the very beginning of his task.

Part IV. is devoted to diseases of the genito-urinary organs. Sir Henry Thompson is the author of that portion which treats of the urinary organs; to Dr. Poland is assigned urinary calculi and lithotomy, lithotrity being treated separately by Mr. Hawkins. All of these articles have been placed under the revision of Dr. Keyes.

This is a department of surgery, in all portions of which American surgeons have achieved the right to express an authoritative opinion, and in more than one they may justly claim to have earned a position unequalled by other countries; but it is to the treatment of vesical calculus that one naturally turns first to see what has been said. Dr. Bigelow's method is discussed in a separate chapter, under the title Rapid Lithotrity with Evacuation, Dr. Keyes remarking that the term litholapaxy has not been generally accepted. It may be well to give here the reasons for the adoption of this name, which do not appear to have been understood. It occasionally happens that the bladder is found to contain a number of small calculi, all of which, though many may be of no inconsiderable size, will pass through the straight tubes without the aid of the lithotrite, in one case over thirty having been removed in this way. It is obvious that lithotrity is a name which cannot be applied to such an operation, and the invention of a new term to cover these cases became a necessity. The general application to all cases in which the Bigelow method is employed seems to be justified, not only on the ground of simplicity, but also for emphasizing the complete novelty of the operation. The lithotrite, represented as Dr. Bigelow's, is not the one he now uses, an important change having been made in the shape of the tip of the female blade. His evacuator has also recently undergone several modifications.

That wonderfully versatile writer, Mr. Jonathan Hutchinson, is the author of the final chapter on the Surgical Diseases of Women, of which Dr. Skene has undertaken the revision; and here also we find that American surgery stands pre-eminent. We refer more particularly to the management of uterine fibroids, ruptured perineum and laceration of the cervix uteri, in which our gynecologists have achieved deserved distinction. The precise position which the latter operation will eventually take has, perhaps, not yet been fully determined. Like all new operations, it has probably been employed more frequently than eventually will be found necessary, but that it is a means of permanent relief, when "local treatment" has failed in a no small number of cases, will, we think, be generally conceded. The few pages given to ovariotomy seem hardly adequate to the great importance of the subject and the prestige which the triumphs of Wells and others have given to this operation. We presume lack of space has prevented the reviser from making any considerable or important additions.

We can but renew the praise, mentioned in the notice of the first volume, of the manner in which the publishers have done their work.

J. C. W.

ART. XXVIII.—*Die Wirkungen der Quebrachodrognen. Der gegenwärtige Stand der Frage nach der Wirkung von Aspidosperma Quebracho (Q. blanco) und Loxopterygium Lorentzii (Q. Colorado) für praktische Aerzte und Pharmaceuten dargestellt.* Von Dr. FRANZ PENZOLDT. Erlangen, 1881: Besold, pp. 37.

As quebracho has assumed a distinctive place as a remedy, we take advantage of the appearance of Dr. Penzoldt's treatise to give an account of its botanical, physiological, and therapeutical properties. In the country of its origin, quebracho had already been known as a remedy for dyspnœa. Experience in Europe and in this country has confirmed this clinical report, and now an accurate knowledge of its physiological actions has been obtained.

Dr. Penzoldt received the first specimen of the bark from Dr. Schickendanz, of the Argentine Republic, and his first paper giving an account of its properties and uses, appeared in the *Berliner klinische Wochenschrift*, No. 19, 1879, p. 269. Mr. O. Prinke,[1] a pharmaceutist of Dresden, also received specimens from Prof. Hieronymus, of Cordova, which were examined by Dr. Dingler, the Curator of the Botanical Garden at Dresden. We learn from these sources, that there are four kinds of trees yielding the so-called quebracho wood and bark; hence there are great opportunities for sophistication. The genuine drug is *Aspidosperma quebracho*, of the natural family Apocynaceæ, and known in the native language as *Quebracho blanco*. There is another quebracho—*Q. Colorado*—much employed for tanning purposes, and which is known botanically as *Loxopterygium Lorentzii*, that has been largely substituted for the first mentioned. Quebracho Colorado is inferior to quebracho blanco, but it possesses analogous properties. The first specimens of bark sent to Europe were quickly consumed, and then the wood of quebracho Colorado was substituted, and hence, it is probable, that the results supposed to be obtained by the use of the other variety, were really due to this. That quebracho Colorado has properties analogous to quebracho blanco, is thus established. Nevertheless, the best successes have been obtained from the administration of Aspidosperma quebracho, and hence the preparations should be made from this. The bark of the branches, it is said, is better than that obtained from the trunk of the tree—a fact well known to be true of the cinchonas, also. The following preparations have been proposed by Dr. Burgos:—

1. *Compound tincture*, composed of the bark 2 parts, orange peel 1 part, and diluted alcohol 5 parts.
2. *Wine*—the bark 1 part, diluted alcohol 2 parts, and white wine 16 parts.
3. *Elixir*—the wine with sufficient sugar.
4. *Extracts*—solid, of the ordinary consistence, and the fluid extract prepared in accordance with the general directions of the United States Pharmacopœia.

The very disagreeable taste of the drug is a serious objection. According to Dr. Burgos, if the wine is prepared with San Juan, or Mendoza, the flavour is much improved. Probably the best preparation is the fluid extract, but its repulsive taste will require some adjuvants to render it even tolerable. As the active principle is insoluble in glycerine, this corrective should not be freely used in preparing mixtures extemporaneously.

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[1] New Remedies, April, 1880, p. 111.

An alkaloid was first isolated by Fraude, who named it *Aspidospermine.* Soon afterward, Wulfsberg declared that this principle was identical with *paytine*, discovered by Hesse, but further investigation not only demonstrated the error made by Wulfsberg, but led to the finding of a new alkaloid in quebracho by Hesse, which he designated *quebrachine.* The richness of this drug in alkaloids is not yet exhausted, for Hesse informs us that there are probably three others. The discovery of quebrachine explained why it was that Dr. Penzoldt had failed to produce with aspidospermine the effects obtained from the bark. Quebrachine has strong alkaline and basic qualities, and is probably a better representative of the drug than the other alkaloid. Under the present circumstances, it were better to prescribe the preparations of the bark than the two alkaloids, as the others not yet separated may be possessed of some physiological power.

The actions of quebracho have been studied from the physiological and clinical standpoints. In cold-blood animals it causes motor paralysis of centric origin, and section of the vagus has no effect on the pulse frequency. In cats it causes motor paralysis and intense dyspnœa, during which the heart's action and the blood pressure are not essentially altered. The muscles of respiration are affected by the paralyzing action, *pari passu*, with the muscles of animal life. In man, some cerebral symptoms are produced. Laquer has observed that it causes headache, dulness of the sensorium, etc. Penzoldt, however, denies that it has any narcotic action, and refers the cerebral effects to the carbonic acid poisoning which ensues when the paralysis of the respiratory muscles has reached the degree necessary.

Penzoldt propounds the theory that the therapeutical effect of quebracho in relieving dyspnœa depends on the increased capacity which the blood acquires for the absorption and giving out of oxygen. Picot (*Berlin klin. Wochen.*, No. 52, 1880) has made some observations on himself, which appear to support this view. He ascended a mountain without and also with quebracho. On the first day, making the ascent without quebracho, his respiration rose to 42 and his pulse to 94, and he had an unpleasant dyspnœa. Making the same ascent after taking a full dose of quebracho, his respiration rose to 30 and his pulse to 80.

The effects of this drug cannot be explained wholly on Penzoldt's theory. All of the remedies belonging to the same group—the paralyzers of respiration—relieve the spasmodic neuroses of the respiratory organs. Thus lobelia, gelsemium, hydrocyanic acid, etc., are useful in asthma, whooping-cough, and laryngismus stridulus, and similar affections.

Very considerable clinical experience in the use of quebracho has now been accumulated. After Penzoldt, Krauth and Picot and Berthold[1] had the best results from it in asthma, the dyspnœa of emphysema, of cardiac disease, of catarrhal pneumonia, etc. The effect in these cases was limited to the mere difficulty of breathing which it relieved. In an old man with asthma (spasmodic), there was marked improvement, the paroxysm terminating after four doses of a teaspoonful of the tincture. In a case of emphysema, and one of difficult breathing from mitral disease, there was marked relief to the dyspnœa experienced, but in the respiratory embarrassments of pleuritis with effusion, and of bronchitis, no good resulted, yet in two out of six cases of phthisis there was some improvement (Berthold). Dr. Laquer, who used the remedy in Prof. Berger's wards, found it to be a valuable palliative in pulmonary emphysema and bronchitis, but of doubtful benefit in the difficulty of breathing due to valvular lesions of the heart. On the other hand, Krauth found it of great utility in heart disease with dropsy, in Bright's disease with dyspnœa, and in tuberculosis with emphysema and dyspnœa. Dr. Berkhart, of London, has used quebracho in asthma and emphysema with the effect to palliate the dyspnœa.[1] One of the most thorough and extensive reports on the use of quebracho is that of Dr. A. H. Smith[2] from the Therapeutical Society of New York. Of eleven cases of spasmodic asthma, the dyspnœa was notably relieved in nine. In two cases of asthma with bronchitis there was no relief. In six cases of cardiac disease, probably valvular, only two experienced any benefit to the dyspnœa, and in these the form of heart disease was not specified. In two cases of pneumonia, in one case of catarrhal pneumonia, in one case of aortic aneurism, in one case of cancer of the lung, and in two cases of Bright's disease, the dyspnœa which accompanied them was relieved. Of thirty-two cases, observed by the members of the Therapeutical Society, in which dyspnœa was a prominent symptom, it was relieved to a greater or less extent in twenty-two; there was no improvement in the difficult breathing in ten, and in one the breathing became more embarrassed. Dr. Smith offers a plausible theory to explain the effect of quebracho. He refers the action to the respiratory centre, the remedy blunting the sense of need of air.

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[1] Virchow u. Hirsch, Jahresbericht for 1880, and London Med. Record, vol. viii. 1880, p. 38.

From the various observations, we gather that quebracho has an undoubted therapeutical effect in lessening or stopping dyspnœa. It is most effective in spasmodic asthma, but may afford relief in any case, accompanied by the symptom dyspnœa. On the whole, the reports are fairly agreed as to the sphere and range of its powers. Some variations may be due to the preparation, and to the substitution of quebracho Colorado for the genuine quebracho blanco. But the differences between them are, however, differences of degree rather than of kind. R. B.

ART. XXIX.—*The Sympathetic Diseases of the Eye.* By LUDWIG MAUTHNER, Professor in the University of Vienna. *Translated from the German* by WARREN WEBSTER, M.D., Surgeon U. S. A., and JAMES A. SPALDING, M.D., Member Amer. Oph. Soc., etc.: pp. 220. New York: Wm. Wood & Co., 1881.

THERE is no class of diseases of the eye which should enlist more earnest attention on the part of the physician who is not a specialist than that which is commonly known as sympathetic ophthalmia. There are other diseases as destructive to vision, but most of them are not preventable, and many we are not able to control when once the morbid process has begun; but we have here an affection which is commonly regarded as being among the preventable diseases, and should it occur there is a liability of the charge of criminal carelessness and neglect on the part of the patient or surgeon, or of both. Moreover, these affections, since they arise mostly from injuries to the fellow eye, are likely to occur anywhere, and the practitioner remote from the specialist, and the young man just entering upon his professional career, are as likely to meet with them as their brethren in more thickly settled communities. To these the little book of Mauthner should be most welcome, as it gives the very latest knowledge of the subject in a clear, succinct, and comprehensive manner. In fact, there is no work in any language which goes into the question in all its aspects with the same thoroughness as does this one, and readers may rely upon it that they have in its pages all that was to be said upon the subject, up to the time of the publication of the original in 1878, which is the date of the German edition from which this translation is made. Nothing essentially new, however, has been added to our knowledge since that time, though *theories* have multiplied somewhat. . All that is essential and practical remains the same.

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[1] The British Medical Journal, January 31, 1880, p. 167.
[2] New York Medical Journal, September, 1881.

The author considers his subject under the heads of anatomy, etiology, pathology, pathogeny and therapeutics. The causes of sympathetic affections are various, and almost all forms of injury and disease have been charged with it, but those which are the most frequent producers of sympathetic mischief are injuries, and particularly those injuries which involve the ciliary body and iris. In regard to this Mauthner says, "Simple injury of the ciliary body, when not implicated with prolapse of the iris or incarceration of some portions of the ciliary body in the penetrating wound, is not often followed by serious consequences." He is of the opinion that violent contusions and concussions inflicted by blunt bodies are the most frequent causes of the cyclitis and its associate diseases irido-cyclitis, which lead to sympathetic trouble. In these affections, as indeed in all troubles causing sympathetic disturbance, the morbid process is often very insidious, and frequently much damage is done before it is discovered. It must be remembered, too, that the sympathetic disease does not follow close on the heels of the original injury. Mauthner says he *never* saw it occur within four weeks, and as many as forty or fifty years may elapse between the receipt of the injury and the outbreak of trouble in the fellow eye.

As regards the form in which sympathetic trouble may appear, we can have it in any form of inflammation of any structure of the eye in which inflammation is likely to occur. It may also manifest itself as a simple *functional* disturbance without any visible alteration of structure, making itself known by an inability to use the eye for any length of time without pain or inconvenience, or it may show itself as a pure neuralgia of the ciliary nerves. This aspect of the question is treated with great impartiality and much detail in the chapter on pathology.

The section on pathogeny is one which shows much research and evinces great fairness on the part of the author in the weighing of evidence. This is the most obscure chapter in the whole question of sympathetic affections. How does the trouble pass from one eye to the other? There are two methods which at once present themselves to the mind as possible; one by means of the optic nerves, the other through the medium of the ciliary nerves. Both of these methods have adherents, but it seems probable, in the light of our more recent knowledge of the subject, that sympathetic disease may be conveyed by either one or both. On this point Mauthner sums up the evidence as follows:—

"We have, on the whole, no right at all to ask whether the sympathetic affection is transmitted along the optic nerves or along the ciliary nerves; nor can we ask whether its transmission takes place along the one path more frequently than along the other. For the transmission may be affected in both ways. But by this, however, we are not to understand that one and the same morbid process can be transmitted, now along one path and now along another. On the contrary, irritative and inflammatory conditions are transmitted from the optic nerve and retina along the optic nerves; whilst those inflammatory processes which are chiefly observed in that portion of the eye which is nourished by the ciliary nerves, and especially the uveal tract, are transmitted along the ciliary nerves. There is not the least doubt that the sympathetic inflammation may frequently be transmitted along both paths at once, or at short intervals, so that many symptoms in sympathetic affections of the uveal tract (amongst others the functional disturbances) are not to be attributed to the inflammation of the uveal tract, but to a simultaneous inflammation of the retina and optic nerve." (pp. 132–3.)

The last section (V.) is devoted to the therapeutics of sympathetic disease. It is here that the author joins issue with many surgeons, particularly of the English school. In England, in a general way it may be said, that an injured eye, particularly if no vision remains, means immediate enucleation.

" . . . Thousands upon thousands of eyes have been sacrificed," says our author, "and where is the oculist who feels wholly innocent of having operated under the philanthropical mantle of preventive enucleation, just for the sake of gaining some especially desirable specimen for his pathological collection?"

These are, indeed, grave charges, and the greater part of this section is given up to an effort to substantiate them. Conservative surgery is the crowning triumph of this era of medical science, but we must take heed lest we allow our conservatism to carry us too far. When a patient presents himself to us with a seriously wounded eye, with perhaps only a vestige of vision remaining, and we know that so long as that patient lives there is a *risk* of sympathetic inflammation in the other, which is likely to go on to total destruction of function in spite of the best directed treatment, and, it may be, even after the lapse of twenty or thirty years, it must be a very confident surgeon who will refuse operative interference, particularly as—according to Mauthner's own statement—enucleation during the active stage of sympathetic disease is futile if not pernicious in its influence on the course of the disease. This "preventive enucleation," which Mauthner seeks to bring into discredit, we deem the *true* conservative surgery. That enucleation during active process in the fellow eye is not always successful, and that it *appears* in some instances to be followed by evil results as to the course of the disease in the sympathetically affected eye, is no argument against its use under proper circumstances. If our patients had always an intelligent comprehension of the dangers they were threatened with, and we could be always sure that they were under the supervision of a competent surgeon, we could then conscientiously allow them time, but unfortunately such a happy combination of circumstances is rarely to be met with. Mauthner lays down the law as follows:—

"My creed in the question of enucleation runs briefly thus: It MAY be performed as a preventive; it MUST be performed in the stage of irritation; it CANNOT be performed in iritis serosa and iritis plastica; it CAN be performed in iridocyclitis plastica, provided the eye causing sympathy is totally blind, but not in a state of violent irritation." (p. 170.)

We congratulate the translators on the satisfactory manner in which they have performed their work, and beg leave to express a hope that the success of this venture may be such as to induce them to give an English dress to the succeeding series of lectures by the same author on ophthalmological subjects. Of text-books we have enough and to spare, but exhaustive monographs like these lectures of Prof. Mauthner are at the present time an absolute necessity, alike to student and practitioner.

S. M. B.

ART. XXX.—*Handbuch der Historisch-Geographischen Pathologie.* Von Dr. AUGUST HIRSCH, Prof. der Medicin in Berlin. Zweite Vollständig neue Bearbeitung. Erste Abtheilung. *Die Allgemeinen Acuten Infectionskrankheiten.* 8vo. S. 481. Stuttgart: Ferdinand Enke, 1881.

Handbook of Historico-Geographical Pathology. By Dr. AUGUST HIRSCH, Professor of Medicine in Berlin. Second edition, entirely rewritten. First Part. *The Acute Infectious Disease*, etc.

THE study of diseases, with special references to their distribution over time and the earth's surface, possesses interest not merely for the scholars in the profession, but also for the busy practitioner of medicine, since for the intelligent management of a disease it is necessary for him to know where, when, and under what circumstances it first made its appearance; what conditions seem to favour its repeated outbreaks; what are the habits of the people and the geological formation of the country where it most frequently occurs; what influences promote its diffusion, and, if contagious, upon what does this property depend. These and numerous similar questions, while they had not been allowed to pass entirely without notice by authors, had never been satisfactorily answered before the appearance of the first edition of Dr. Hirsch's work twenty-five years ago. Since then there have been many other workers in this field, the result of whose labours has been a vast addition to our knowledge of the etiology of disease. Indeed, as the author says, we know more at the present day of the diseases of remote parts of the earth than was known in the early part of this century of those of the highly civilized nations of Europe or of this country.

The work, when finished, will consist of three volumes. This volume is made up of articles on the acute infectious diseases; the second will be devoted to the discussion of the chronic infectious diseases and constitutional diseases; and the third to that of organic diseases.

The general plan of the work will perhaps be made most clear to our readers by making for them a brief abstract of a chapter on an important disease, as, for instance, that on the plague:—

The author first traces the history of this disease from the time when we have the first authentic accounts of its ravages down to the present day. He finds in the *Collectanea*, of Oribasius, references to the writings of Rufus, which establish beyond a doubt the fact that the plague existed as an epidemic disease in Libya, Syria, and Egypt two or three centuries before our era, and that it also occurred in those countries at about the time of the birth of Christ, and for a century afterwards; but it would seem not to have appeared again until the middle of the sixth century, when it extended for the first time to the continent of Europe, where it committed great ravages, and received, in consequence of the malignancy of some of its symptoms, the name of Black Death. It maintained a firm footing in Europe, breaking out from time to time, and causing, especially during the Middle Ages, great loss of life, until the year 1841, when, if we except a slight outbreak in Astrachan, it disappeared finally. In studying the history of the various epidemics which have occurred in Europe, the author has satisfied himself that Turkey has always been the avenue by which the disease has found its way to the continent.

We have, of course, less reliable accounts of the epidemics of this disease which have occurred in Africa and Asia. In Africa, it would appear always to have occurred first in Egypt, and to have extended from that country to the States of Barbary. On the other hand, it seems never to have spread to Nubia. In Asia, it is probable that there are few countries that have not been visited, at some time or other, by the plague, and among these Syria has generally suffered severely from it. Indeed, until recently this country was looked upon as the starting-point of the disease. From discoveries and investigations which have been made during the past few years, the author is inclined to think that the disease has existed in the mountainous districts of India for centuries, and that we must regard this country as its veritable home.

The author next proceeds to consider the various conditions which have been thought to favour the occurrence of the plague, and shows, by references to the recent reports of Indian physicians, that the countries of the tropical zone have by no means enjoyed the immunity from the disease which has been until very lately generally conceded to them. Extreme heat would appear, however, to exert a destructive influence upon the cause of the disease, and in Egypt epidemics are found generally to have commenced in the fall and to have ceased in the spring, but to this rule there have been a few exceptions. The author also assigns to dampness of the atmosphere very little influence in the propagation of the disease. In Egypt, it has not always prevailed most extensively in those years in which the overflow of the Nile and the consequent saturation of the ground with moisture have been most complete. He shows, also, that the disease may occur in a mountainous region as well as in a low-lying plain, and that it has been equally virulent in countries of the most dissimilar geological formation.

Misery, filth, and neglect of all the laws of hygiene appear to be the influences, which, if they do not cause the disease, certainly favour its spread, and those races which habitually set these laws at defiance are those which suffer most during the prevalence of an epidemic. Otherwise, there does not seem to be any difference in the susceptibility of the different races to the disease.

Dr. Hirsch evidently does not regard the plague as a very highly contagious disease, since he says that physicians and others who simply visit the sick, and do not spend much time in the sick-room, are but rarely affected by it, and doubts whether it is inoculable through the blood and secretions of the sick, or even through pus taken from the glandular swellings. He admits, however, that the disease may be diffused by means of the clothing of the patient, or other fomites. The poison upon which the disease depends is developed, he thinks, outside and not within the individual.

In conclusion he devotes several pages to a description of the disease, and to a comparison of the symptoms of the disease as described by the writers of the Middle Ages, with those presented by the disease as it occurs in India at the present time.

The book is a valuable one to the student of disease, and as such we recommend it most cordially to the profession. J. H. H.

ART. XXXI.—*Medico-Chirurgical Transactions.* Vol. LXIV. 8vo. pp. lxxvii., 324. London: Longmans, Green, Reader, & Dyer, 1881.

THIS volume contains nineteen papers, of which we have, heretofore, analyzed in the JOURNAL seven; to these, therefore, we shall not again direct our reader's attention.

Of the remaining twelve the first is *A Case of Abscess in the Neck which in its course destroyed a large portion of the Carotid Artery, Jugular Vein, and Pneumogastric Nerve,* by Mr. W. S. SAVORY, so far as we know a unique case, as to the character and the amount of the destruction it effected. He relates two other analogous, but less severe cases, in which, respectively, the jugular vein and the femoral artery and vein were destroyed. The chief case, however, was one of a man, æt. 31, who for two years had had a "lump" on the left side of his neck, which, after three days of irritation, suddenly "burst out bleeding." On admission the cavity was at once laid open, and an attempt made to tie the bleeding vessels. This being unsuccessful, it was packed with strips of lint soaked with Monsel's solution. He died four days later. The plate shows clearly the surprising solution of continuity of the vessels and the nerve. It is a matter of fact, not a little surprising, that no disturbance, either of the respiration or of the cerebral circulation, had attended the destruction of the nerve or the artery, due, doubtless, chiefly to the gradual changes produced. In this JOURNAL for April, 1871, Dr. S. W. GROSS published an elaborate paper on "Ulceration of the Jugular Veins," in which he collected a number of cases, which will well repay perusal. PILGER, in the *Deutsch. Zeitsch. für Chirurgie,* 1880, p. 130, also gives a case involving destruction of the nerve.

Amœboid Movements of the Colourless Blood-corpuscles in Leuchæmia, by Dr. JOHN CAVAFY, is the next paper. The patient, a male, æt. 26, died after seven months of illness of leuchæmia, with epistaxis, vomiting, purpuric spots, and enlargement of the lymphatic glands, spleen, and liver. The blood was examined on twelve occasions, the total number of white corpuscles in the specimen being first counted, and then the number of those that exhibited any amœboid movements. Meantime the temperature of the stage was kept at from 93° to 107°. The percentage of the amœboid corpuscles was very small, in spite of the temperature, ranging from only 24 down to 4 per cent. And the progressive diminution of those showing such movements was very noticeable, the first six observations showing a mean of 12 per cent., the last six of only 6 per cent. The conclusions he reaches are that, 1. The great majority of the colourless cells in leuchæmia are dying or dead; 2. Emigration of these dead cells is impossible; 3. The formation of thrombi is favoured; and 4, this absence of amœboid movement may be made useful as a means of differential diagnosis of the early stages of leuchæmia, and a simple leucocytosis or temporary increase in the number of the colourless corpuscles.

Dr. FRANCIS H. CHAMPNEYS next contributes two articles on *Artificial Respiration in Still-born Children*, extending to sixty-two pages. His conclusions, in the first place, are unfavourable to the methods of Marshall Hall, Howard, Schüller, and Schroeder, and favourable to Silvester's, especially with the modifications of Bain and Pacini, and to Schultze's method. Opisthotonos should be avoided, as it produces expiration. In the second paper he analyzes the effects of the various methods of artificial respiration in different parts of the lungs.

The paper by Mr. T. SPENCER WELLS will attract attention by its very title—*Two Hundred Additional Cases, completing One Thousand Cases of Ovariotomy, with Remarks on Recent Improvements in the Operation.* It is no wonder, then, that Mr. Wells has so charming an Elizabethan villa at Hampstead Heath. Moreover, no one envies him the possession of it.

From 1859 till the present time he has fearlessly published the result of every case. The results have progressively improved, the deaths in each hundred cases successively being 34, 28, 23, 22, 20, 28, 24, 24, 17, and 11. An excellent result, though not equal to the percentages obtained by Keith, Tait, and Knowsley Thornton, of only three to four in the hundred. The fall to 17 and 11 per cent. coincided with the adoption of the antiseptic system.

The improvements in the operation, besides the use of antiseptics, have been the following. Everything but silk for both sutures and ligatures has been abandoned. Dry dressings, of either thymol gauze or cotton-pads charged with borax or phenol, have been used, as they are more comfortable and more absorbent. As a rule, they are not touched before seven or eight days. After an operation the sponges are kept in a weak solution of sulphurous acid, and when operating they are washed in water and then carbolized. The instruments used are all nickel-plated to prevent rust. He has used the spray, but feels doubtful about it. The judicial tone of the whole article, as compared with Mr. Lawson Tait's boast of having pricked the antiseptic bubble, is most commendable.

The intra-peritoneal treatment of the pedicle has been almost constantly used. In 1878 of 627 extra-peritoneal cases, 20.73 per cent. had died; and of 157 intra-peritoneal cases, 38.2 per cent. had died, nearly twice as many. The great fall in the mortality in the later cases, so that that method, which was formerly twice as fatal as the clamp, is now only half as dangerous, he attributes to the antiseptic method, after which the septic changes around the tied pedicle are almost never seen. This decided leaning towards the intra-peritoneal treatment of the pedicle is in accordance with the experience of most gynecologists of large experience. Moreover, another great gain from the antiseptic system is the nearly absolute abandonment of drainage. In not one case treated antiseptically has he used drainage, and on reviewing them he thinks that in only two or three would it have been useful.

Formerly temperatures of 100° to 103° were usual, and 104° to 107° were not uncommon, and the head was cooled by ice in at least half the cases. Now cold is not used in one case in twenty, and 102° are rarely noted. Recovery, with no rise above 100°, is the rule. Phenol is his favourite antiseptic.

Dr. ARTHUR RANSOME contributes a paper, entitled "*Further Obser-*

vations on the Value of Stethometry in the Prognosis of Chest Disease." It is a continuation of his contributions on the same subject in his book on Stethometry, and his still earlier paper, in 1873, on the Respiratory Movements in Man. He has conclusively shown that both the forward and the upward movements of the chest-wall, as judged from the movements of the clavicle and the third and fifth ribs, are not only greatly lessened in phthisis, but that a fairly correct prognosis may be made by the use of this method. It is an important help to us in doubtful cases, and further use of it will doubtless increase its accuracy and value. Medical examiners in life insurance will value its results, and may well give a trial to his method.

The Development of a Layer of Elastic Fibres in Duct Cancer of the Breast, is a paper by Dr. GEORGE THIN. It continues and confirms the observations he communicated to the Society in the previous year by further studies on the same specimen.

Mr. CHARLES HIGGENS narrates a case of *Vascular Protrusion of the Eyeball*, in which ligature of the common carotid effected an entire cure. The operation was followed on the second day by partial hemiplegia of the opposite side, which varied curiously, and became complete on the sixth, began to improve on the twelfth, and had disappeared on the twenty-fourth. He ascribes it reasonably to serous effusion. The hair also turned from black to gray.

This and two cases published in the *American Journal of the Medical Sciences*, in April, 1876 and 1877, supplement to date the complete paper on the subject, by Mr. Rivington, in vol. lviii. of the *Medico-Chirurgical Transactions.*

Two papers on Skin Diseases follow. The first is by Dr. GEORGE THIN. It is *An Unusual Case of Warty Growths on the Face.* The patient at first glance looked as if suffering from confluent smallpox. The warty tumours appeared chiefly on the face, but had also appeared on the hands. A microscopical examination confirmed the diagnosis. The case was rebellious to all treatment for three years.

The next is *A Case of Urticaria Tuberosa, with Unusual Symptoms*, by Mr. WM. MORRANT BAKER, in which the wheals of urticaria were combined with persistent nodular thickening of the skin proceeding to ulceration.

Mr. JOHN CROFT next discusses *The Immediate Treatment of Fractures of the Leg by Plaster-of-Paris Splints*, to which is appended a table, giving briefly the mode of treatment of such fractures in eleven of the London Hospitals. At nearly all, splints are preferred; but at University the plaster bandage is used, and the plaster splints at St. Thomas's (where Mr. Croft is surgeon). It is noteworthy that in 1875 of 97 simple fractures of the leg, 63 were treated by splints only, and 19 by plaster of Paris only; in 1878, of 124 cases, 15 were treated by splints only, and 96 by plaster only; and in 1880, of 131 cases, 7 were treated by splints, and 123 by plaster. The progressively growing figures—presuming that the results were good, as it is proper to assume—are the best argument he can present.

He cuts two duplicate pieces of flannel for the outside, and two for the inside of the leg. In length they extend from above the knee nearly to the toes; in width a half-inch less than the semi-circumference of the leg. One layer of flannel is soaked in the plaster and laid on the corresponding piece. The double splint is then applied with the dry layer next the skin, and a muslin bandage holds it in place. Usually an anæsthetic is used during the dressing, and traction is kept up till the plaster sets in about three minutes. Cutting the outer bandage in front or back releases either of the splints, which can be reapplied by a new outside bandage. For fractures of the femur it is modified.

The last paper is by Mr. CLINTON T. DENT, on *The Pathology of Acute Periostitis.* He gives clinical cases confirming his opinion that the different layers of the periosteum may be the seat of acute inflammation, and does not consider osteo-myelitis as a necessary concomitant.

W. W. K.

ART. XXXII.—*Restriction and Prevention of Diphtheria.* Document issued by the State Board of Health of Michigan. Revised edition of 1881. W. S. George & Co.: Lansing, Michigan.

THE State Board of Health of Michigan has been doing distinguished service in behalf of the public health. From its very organization its laudable aim has been to enlighten the people upon all subjects pertaining to the prevention of sickness and the protection of life. It has departed from the old routine custom of confining action exclusively to the enforcement of a few stereotype laws and ordinances limited in their scope to, and affecting only, the more patent and flagrant violations of sanitary law, and has entered upon the wider field of *protective* medicine. And, as an important element of success in the performance of its functions for conserving the public health, it has sought to educate the masses in the plain truths of domestic and public hygiene, especially in the practical details and conduct of preventive measures, thus securing that co-operation without which the best intended ordinances must fail, or be enforced only with the greatest difficulty.

In pursuance of this plan the board has recently issued a circular bearing the title of Restriction and Prevention of Diphtheria. It is replete with wholesome advice respecting the precautions to be observed in the management of the patient, the sick-room, the premises, and the attendants; the methods to be employed for disinfecting rooms, clothing, etc., and explains the purposes of the law in requiring the prompt report of cases of disease to the health officer, and the removal of the infected, in certain cases, to a separate building for treatment. It also suggests certain precautions to be adopted by persons during the prevalence of an epidemic, who otherwise might incautiously or ignorantly expose themselves or others to the danger of an attack. It advises the non-intercourse of persons recently recovered from the disease, and of persons from the premises where there has been a case of diphtheria, with others, until such intercourse is deemed prudent by competent authority. Rule eleventh may be quoted :—

> "Rule 11.—All persons recovering from diphtheria should be considered dangerous; therefore such a person should not be permitted to associate with others, or to attend school, church, or any public assembly until the throat or any sores which may have been on the lips or nose are healed, nor until, in the judgment of a careful and intelligent health officer, he can do so without endangering others; nor until after all his clothing has been thoroughly disinfected, and this without regard to the time which has elapsed since recovery if the time is less than one year. Nor should a person from premises in which there is or has been a case of diph-

theria attend any school, Sunday-school, church, or public assembly, or be permitted by the health authorities, or by the school board to do so, until after disinfection of such premises, and of the clothing worn by such person if it shall have been exposed to the contagion of the disease."

The publication of this circular is opportune and deserves to be commended. Unfortunately, diphtheria has not been regarded in the same serious light as scarlet fever, smallpox, and the like, and the health authorities and the public have not been accustomed to exercise the same vigilant care and circumspection in its management as its dangerous character would seem to demand. Why this is so it is difficult to comprehend. Its contagiousness is a well-recognized fact, and its ravages are familiar even to those who are not well acquainted with the mortuary statistics of the country.

> "A disease," says Dr. Baker,[1] "which in one year (1859) caused in England over ten thousand deaths; in another year (1873) over one thousand in New York City; for each of two successive years (1876, 1877) in Massachusetts, over two thousand deaths; which for the eight weeks ending with Nov. 13, just passed, caused an average of forty deaths per week in the city of Brooklyn alone; and which, when once introduced into a city or State, does its work year after year with varying but with certain effect: a disease which, for the last twenty-three years, has been gradually extending itself over the whole northern belt of our country, and which declines only to rise again in periods of four to ten years, is a disease whose ravages are no less terrible than those of yellow fever, and which demands the attention not only of local, but of State and national boards of health."

There is the same urgent necessity for placing cases of diphtheria under strict sanitary surveillance, and of resorting to every reasonable precaution affecting the sick-room, premises, etc., and the intercourse of persons from infected houses with others, as is now required in the case of smallpox, scarlet fever, and other virulent diseases. There is need of regulation by the same stringent ordinances and rules, if any success is expected in restricting or checking the extension of this fatal disorder.

Diphtheria being pre-eminently a disease of childhood, it is a question to be pondered, whether the agency of public schools is not a very frequent one in communicating the contagion from person to person. Dr. Baker seems to have proved that diphtheria was spread in Lynn, Mass., in 1876, by the contact and association of children in schools, and similar evidence might be procured in other directions by the same patient investigation. Comparatively little attention has, however, been given to the subject, and but small effort has been made to prevent the spread of the disease in this manner. There are no insurmountable difficulties in the way, if only persistent, intelligent, systematic, and concerted action be brought to bear upon the elimination of this source of transmitting the disease. It is attempted in the case of smallpox and scarlet fever; why not in that of diphtheria?

Science has as yet discovered no means of antagonizing the poison of diphtheria in the system, or of conferring immunity from attack upon persons exposed to its contagium; no prophylaxis such as vaccination bears to smallpox: but it is not unreasonable to suppose that patient investigation and experimentation upon this important subject may yield as profoundly interesting and valuable results as those recently achieved by the researches of Pasteur in a collateral field of experimental medical science. Until then our main reliance must be upon thorough and complete *isolation* of the sick and efficient *disinfection* of all infected material, both practically difficult of enforcement. In the first place, there will be required good laws and their intelligent, painstaking, and resolute administration. The greatest possible advantage will accrue from the universal and hearty co-operation of the medical profession with the health authorities, and the unreserved and faithful use of their exceptional opportunities for advising, directing, and even superintending the measures necessary for the restriction of disease and the protection of health and life.

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[1] The Relations of Schools to Diphtheria and to Similar Diseases. By Henry B. Baker, M.D., Secretary Michigan State Board of Health, Boston, 1881.

Great results must be expected from a constant and rigid inspection of schools, and from imposing a disability upon all children who are, or have recently been sick, or who have associated with the sick (its violation punished by fine, if needs be), and the positive prohibition of all such persons from returning to school until after being so permitted upon certificate of a properly qualified sanitary officer.

The establishment of hospitals for the care and treatment of exceptional cases, and of disinfecting stations for the general use of the public, and also of buildings for the temporary care of persons who have been obliged to vacate their homes for the purposes of cleansing and disinfection,—are all very important requirements. From what has already been said it will appear, that no small benefit will result from instructing the people, by means of tracts, in the nature of infectious diseases; as to the risks to which they are exposed; in the peculiarly responsible relations which they sustain to society in the part they are liable to act in the propagation of these affections; and also in the requirements of the law, and in the details of the line of conduct they are expected to pursue. W. H. F.

Art. XXXIII.—*The Hysterical Element in Orthopædic Surgery.* By Newton M. Shaffer, M.D., Surgeon in Charge of the New York Orthopædic Dispensary and Hospital, etc. Large 8vo. pp. 66. New York: G. P. Putnam's Sons, 1880.

This monograph of sixty-six pages, originally an essay read before the New York Neurological Society about two years ago, and published in the *Archives of Medicine*, has been made into a fair-sized book by the use of leads, wide margins, and heavy paper. In looking over it, one cannot fail to be attracted at first by the systematic arrangement of the discussion, as evidenced in the table of contents; nor does a careful reading lead to disappointment in the agreeable expectations which so good a beginning naturally arouses. The author discusses in regular order, and in a clear, scholarly manner, the phenomena of nervous mimicry of diseases of the knee-joint, of the hip-joint, of the vertebral joints and of the ankle-joint. In the preface and in the contents he calls attention to the absence of comments upon these conditions in "some of the more recent and pretentious works" on orthopædic surgery: a circumstance which is in no way creditable to their authors, in view of the tolerably frequent occurrence of such simulations of organic disease, and the clear light in which they have been set by men like Brodie and Paget.

In treating of what has been called "hysterical knee," he rests the diagnosis upon the disappearance of muscular spasm when the attention is diverted; the variable and inconstant character of all the subjective and most of the objective symptoms; the want of proportion between apparent pain and what the examiner knows would cause it in a really disorganized joint; the voluntary and conscious expression of pain; the exaggeration of distortions or limping; the absence of these when consciousness is entirely suspended, as in profound sleep or moderate anæsthesia; the normal reaction to faradic stimulation; the absence of the usual signs of local inflammation, and the presence of an emotional or hysterical tendency.

When speaking of neuro-mimesis of hip-joint disease, an important diagnostic point is drawn from the author's observations in several hundred recorded cases of true hip-joint disease, in which he finds that the atrophy of the thigh was uniformly far in excess of that of the leg.

Again, attention is called to the fact that one usually finds, in cases of true joint disease, that others notice the trouble first, while in the mimic disease the patient complains before any one else has noticed anything wrong. A useful suggestion is presented two or three times in different forms, namely, to make several examinations before coming to a positive diagnosis in case there is any uncertainty in one's mind.

The author prudently warns against being too quick to make a diagnosis of hysterical or mimic disease; since it does not answer to assume, because a patient is hysterical, that that is all that ails him or her—as many an unrecorded blunder could testify. It is in cases when the hysterical tendency is most marked that the difficulty of making a correct diagnosis is greatest. And it may be that the specialists in nervous diseases are as likely to ignore actual lesions as the orthopædic surgeons are to underestimate the significance of purely nervous manifestations.

It will be comforting to any man who fails to conduct all his cases to a successful issue to learn that the author, when he wrote, had a case under observation "where everything which could be suggested by the most eminent medical talent in the city (New York) was carried out in the treatment of a recognized hysterical paralysis of the right lower extremity, with only partial success."

There is much to praise in the book before us, and very little to criticise adversely. Perhaps, for the credit of his town, the author has emphasized a trifle too strongly the eminence of the medical men whose mistakes he records. And, we think, the make-up of his book would be better if the studies concerning the different joints were set in separate chapters. These, however, are trifles, compared with the merits the monograph presents. It makes a very interesting and useful appendix to the sterling common sense of Brodie in his "Clinical Lectures on Surgery" and the charming writing of Paget in his "Clinical Lectures and Essays"—both of which should be read by any one who wants the best that has been written on this subject. C. W. D.

Art. XXXIV.—*Beriberi, or the "Kakké" of Japan.* By Duane B. Simmons, M.D., Eight years Director and Physician and Surgeon-in-Chief to Jienzen-in (the Prefecture or Government Hospital), etc. "*Beriberi*" *at the United States Marine Hospital, San Francisco, Cal.* By E. Hebersmith, M.D., Surgeon Marine Hospital Service. Washington, 1881.

The work of Dr. Simmons is an excellent account of this strange malady—Beriberi—by a physician who has the ability and training to utilize exceptional opportunities. The second article is contained in the Annual Report of the Supervising Surgeon-General of the Marine Hospital Service, for the fiscal year 1881, and is based on a study of eighteen cases of this disease admitted to the hospital at San Francisco, from the Brazilian steam-corvette *Vital de Oliveira.* Dr. Hebersmith refers, frequently, to the monograph of Dr. Simmons, but he also contributes important observations of his own. The Brazilian vessel, extremely ill-arranged from the sanitary point of view, was rendered still more unhealthy by an imperfect dietary, and hence the crew became susceptible to the beriberi infection, which was encountered at Yokohama. Beriberi occurs in the Eastern Hemisphere, in countries bordering on the Indian Ocean, in Egypt, and in the Western Hemisphere in Brazil. "The principal seat of beriberi," says Lombard (*Traité de Climatologie Médicale*, Paris, 1880, tome iv. p. 559), "is the peninsula of India, the island of Ceylon, and the Indian Archipelago."

Two forms of the disease have been recognized from an early period: wet beriberi (beriberia hydrops), and dry beriberi (beriberia atrophia). The wet form is more rapid in its progress and more fatal.

The opinions which have been put forth in regard to the cause of the disease are entirely speculative. Simmons holds that it is a miasmatic material which has strong affinities with marsh miasm. Dr. Hebersmith considers it a blood disease; Dr. Eldridge an infectious disease; Dr. Aitken finds in the extreme anæmia the real cause; and the authorities quoted by Dr. Copland (Dictionary) regard the disease as a product of bad hygiene and malarial poisoning. Those are most liable whose occupations most expose them to the worst conditions, and who are reduced by an insufficient diet to a feeble and anæmic state. It is a disease of the summer, and is most prevalent when the climatic changes are severe and frequent, and the rainfall considerable.

The cases are acute, subacute, or chronic; mild or pernicious. There is usually a prodromic period, with intermittent symptoms—chilliness, a sense of fatigue, inaptitude for bodily or mental exertion, and weakness of inferior extremities. These symptoms may continue several weeks. The disease proper begins by spots of anæsthesia, over the anterior tibial muscles, in the tips of the fingers, and around the mouth, in the order named; then paresis of the muscles follows,—of those muscles beneath the areas of anæsthesia. A spastic contraction of the calf muscles also ensues, whence the gait is high-stepping, the weight resting on the toes, the heels elevated; a band-like constriction of the chest is also felt; and the contracted muscles, to a less extent the muscles generally, are sore to pressure. An outline figure in Dr. Simmons monograph well exhibits the general muscular rigidity, and the contraction of the calf muscles.

Both forms agree in the character of the symptoms up to this point. In wet beriberi, the anasarca now begins, the œdema first appearing in the areolar tissue of the front part of the leg, and then extends to the body generally, which is round, smooth, and distended, the skin having a whitish-sallow tint. The pulse of the wet form is full, large, and without tone, and a systolic murmur becomes audible, and is "most distinct over the pulmonary valves." The heart seems to dilate, and the area of cardiac dulness is increased. The temperature is normal and often below. In fatal cases, dropsy of the cavities and œdema of the lungs come on, and violent vomiting closes the scene.

In the dry form the muscles waste, atrophy of their proper elements occurs, and complete paralysis ensues. The body shrinks; contractions of the atrophied members take place, and the heart acts feebly, the area of cardiac dulness narrowing. The urine is said to exhibit little or no evidence of disease, and is free from albumen. On boiling with nitric acid, it becomes very dark, almost black.

On post-mortem examination, the following changes are noted: There is no rigor mortis; ecchymoses and vibices are usual; the lungs are œdematous and the cavities contain fluid; the heart is dilated, softened, but the valves are not affected; the intestines are of a pink hue; the solitary glands and patches of Peyer are thickened; the cavity contains fluid. No special changes are noted in the liver, spleen, or kidneys. Effusion in the spinal canal and softening of the cord at various parts, have been frequently observed, and exudation into its substance and corpora amylacea are amongst the recorded alterations. The muscles affected by paralysis and atrophy undergo changes of a degenerative kind, their striations disappear, and the elements become fatty or vitreous.

A very important and interesting feature of Dr. Hebersmith's report is the condition of the blood. He includes "Notes on the Microscopic Examination of Blood," by Dr. J. H. Wythe, of San Francisco. Dr. Wythe describes the changes in the red and white corpuscles, and the appearance of rods and sarcina (?) present in the serum. The changes which occur in the morphotic elements (figured opposite, page 228) are well depicted. The rod-like bodies present the appearance of micrococci. Dr. Wythe thinks that the changes in the corpuscles occur as follows: "The white cells of the blood swell, become granular and disintegrate; then the red ones shrink, subsequently swell, and break up into straight or curved rods or granules."

That beriberi is a miasmatic infectious disease, is probably true. The microscopical studies of the blood, detailed in the report of Dr. Hebersmith, demonstrate that minute organisms, colonies of micrococci, develop in that fluid. None of the reports deal adequately with the spinal changes, nor do they contain satisfactory studies of the symptoms. The important results to be obtained from a proper examination of the electrical reactions of the paralyzed muscles are not referred to in any of the monographs. The relation of the spastic condition of the muscles to the paresis has not, apparently, been considered by the clinical observers. Notwithstanding omissions in the direction to which we have referred, the monographs under examination are full of valuable information about a rare but most interesting malady.

R. B.

Art. XXXV.—*Transactions of State Medical Societies.*

1. *Medical Communications of the Massachusetts State Medical Society.* Vol. xii., No. vii., 1881. 8vo. pp. 473–671, 195–254. Boston, 1881.
2. *Transactions of the Medical Society of New Jersey*, 1881. 8vo. pp. 311. Newark, 1881.
3. *Proceedings of the Nebraska State Medical Society, Ninth, Tenth, Eleventh, and Twelfth Annual Sessions.* 8vo. pp. 257. Omaha, 1880.

1. The Annual Discourse before the Massachusetts Society, on *Medical Societies, their Organization, and the Nature of their Work*, by J. Collins Warren, is a valuable contribution to the history of medical societies in this country, but also refers briefly to the International Congress and the British Medical Association. Referring to the functions of these associations in the United States, gratification is expressed at the amount of valuable work accomplished in elevating medical education, and uniting the medical profession, and due credit is given to the American Medical Association. The medical mind was, throughout the country, roused into activity by its formation; and, although the early work in aid of medical education had little apparent effect at the time, undoubtedly it may fairly claim a share of the influence which has brought about the great changes of the past decade. The questions of public health, which have lately been so prominent, have reminded us of the usefulness of such a body, when well managed, in time of need. After pointing out defects due to the unsatisfactory delegate system of membership, and the ever-changing character of the material of this body, which give it a lack of stability greatly impairing its efficiency, the author suggests that something more than the lagging volume of Transactions be given in exchange for the annual assessment, and warmly approves of the plan of changing the plan of publication to that of a weekly periodical, as recommended by Prof. Gress, Sayre, and others. Speaking of its possibilities, in store for the American Medical Association, Dr. Warren says:—

> "The future of the Association depends largely upon the success with which it identifies itself with the interests of the State societies. It would become a bond of union between them, the usefulness of which should be made so apparent that all would be glad to avail themselves of it. To effect this object, the present organization must be discarded, and an active and vigorous body must take its place, making its influence perennial, and appropriating for its highest offices the ablest men in the country. With such machinery the profession of the United States would, I think, be startled to find the power which it would be able to exert."

Some of the salient points in the organization and history of a number of State medical societies are also briefly considered, chiefly, however, as throwing light upon the course of the Massachusetts State Medical Society, and pointing out dangers to be avoided in future. The career of this society has been, for a century, one of

> "unbroken prosperity, unmarred by disputes or factions. In spite of the various waves of delusion, or pseudo-science, which have passed over the community during that period, the Society has maintained an unbroken front, and has always rallied round the flag of truth and integrity. Its attitude has been the only one which a truly scientific body could take. It has been the champion of perfect

iberty to all, but has withheld the hand of fellowship from those who would deny this boon to others, or would seek to enchain science with the manacles of theory or deceit."

The remainder of this volume is chiefly constituted of the admirable Centennial Address by Samuel Abbott Green, which is also historical, and deals largely with the history of medicine in Massachusetts in early colonial times, and contains interesting memoirs of many of the prominent physicians of that day. The report of the interesting Anniversary proceedings, with the usual minute of the meetings of Council, conclude the records of the most memorable and most enjoyable meeting probably that has ever been held by the Society.

2. The *New Jersey* Society met at Long Branch upon the one hundred and twenty-seventh anniversary of its organization. The greater part of the volume of *Transactions* is made up with the minutes of the meeting, reports of committees, and reports from district societies. Communications in the form of essays, besides the President's Address, are contained in this volume: one is a review by Stephen Wickes, M.D., in which some brief reminiscences extending over twenty-five years of the life of the Society are communicated; the second is an essay by G. H. Balleray on *Lacerations of the Cervix Uteri*, in which hystero-trachelorraphy is warmly supported, although it should not be unnecessarily performed. "Slight lacerations, unaccompanied by ectropion, and producing no discomfort, should be let alone." Silk sutures were at first used, but a preference was expressed for silver wire on the ground of subsequent experience. Mr. Charles J. Kepp, of Newark, contributed the third paper on *Eye Affections from Malarial Poisoning*. The most important paper read before the meeting was the President's Address on *Pleural Effusions, with Especial Reference to Pyo-thorax*, by Lewis N. Oakley, M.D., of Elizabeth. Reports of a number of cases are communicated showing the value of aspiration, systematic antiseptic washes, and the insertion of a silver drainage-tube.

In the reports from the district societies there are a number of interesting communications upon different subjects, probably the most important being an account by Dr. Henry E. Branin of an epidemic of typhus fever at the Camden County Almshouse. It is especially interesting from the fact that the health of the inmates of the asylum had been much reduced by malarial attacks, and that owing to certain circumstances the wards were frightfully over-crowded; the fever had all the appearances of typhoid at the beginning, but soon developed active contagious properties, and assumed the character of typhus; it was further observed that as soon as the hospital was fairly organized the endemic declined in prevalence and mortality. Out of 103 cases, 33 died. Age greatly influenced the death-rate; the young mostly recovered.

3. The minutes of the *Nebraska* Society, with the Presidential addresses of the last five meetings, are included in the present proceedings, together with a full report of the meeting held in 1880. Very possibly some of the papers were read at preceding meetings, but they have nothing but their internal evidence to suggest the date. The most prolific contributor to this volume is Dr. A. S. V. Mansfelde, of Ashland, who is represented by a lecture on *Pleuritis, with especial reference to Surgical Treatment of Suppurative Pleurisy* (advocating free drainage and antiseptic injec-

tions); *Reminiscences; The Ovum in its Relation to the Laws of Evolution;* and *Sex Productions, whence our Body and its Individual Sexual Character;* and Dr. S. D. Mercer, who reports a case of *Compound Complicated Dislocation of the Scaphoid; Fracture of the Skull, with Trephining, Recovery; Depressed Fracture of Frontal Bone; Excision of Astragalus;* and an extended paper on *Spinal Curvature, Treatment by Sayre's Method.* Among the shorter papers is one on *Excision of the Hip-Joint*, containing a report of a case in which it was successfully performed by Geo. Tilden, M.D., of Omaha. Dr. M. J. Gahan reports a successful operation of ovariotomy performed in 1880; and Dr. L. J. Abbott records a case of operation for *Laceration of the Perineum in an Infant*, caused by injury from manipulation by the midwife during delivery, it probably having been a breech presentation.

This volume shows unsuspected activity in the medical profession of this progressive State. It is to be regretted that more careful proof-reading was not performed, as a multitude of orthographical, and not a few grammatical errors, might have been corrected that now mar the pages of this interesting volume of Proceedings. F. W.

Art. XXXVI.—*Report on Hawaiian Leprosy.* Read before the California State Medical Society at San Francisco, April 20, 1881, by A. W. Saxe, M.D. Pamphlet, pp. 26. Santa Clara, 1881.

It is now six years since the attention of dermatologists and of the profession generally was drawn to the presence of leprosy in North America, and particularly in the United States, by Prof. James C. White, of Boston, in a paper read before the Philadelphia International Medical Congress. At the first meeting of the American Dermatological Association, held at Niagara Falls in 1877, a committee on Statistics was appointed, in whose reports for each subsequent year have been included the statistics of leprosy in the United States, so far as these could be obtained, together with reports of cases and communications from various observers. At the fifth annual meeting of the Association, held last summer, nearly a whole day was devoted to the reading of papers on leprosy, and the discussion of the nature of the disease, the question as to its contagious character, and its increasing prevalence in this country. The interest taken in the subject of leprosy by the Association, together with the appearance of various publications and communications emanating from individuals in different parts of the country, show that the time has come for a more general study of the disease in all its bearings, in the hope that we may be able to control and repress it as it occurs in our midst, and may in time succeed in extirpating the affection entirely.

To this end, every contribution to our knowledge is valuable, and Dr. Saxe's paper is particularly interesting, as giving new information regarding the prevalence and characteristics of leprosy as found in the Hawaiian Islands, the yearly increasing commerce of which with our ports makes it important to prevent, as far as possible, the importation of the disease which is so prevalent there.

It appears from the statements of Dr. Saxe that leprosy was imported from China into the Hawaiian Islands in 1840; that the first leper was recognized there eight years later; and that the first governmental action for the arrest of the disease was taken in 1859.

In 1866 the lepers under governmental supervision were transferred to the Island of Molokai, which was set apart as a leper colony where the infected could be isolated.

Five hundred and twenty-nine lepers were sent to Molokai. In 1872 the census of lepers showed three hundred and eighty-five in the settlement; but, as this showed that only a portion of the actual lepers had been segregated, public opinion was aroused, under the pressure of which four hundred and fifty-one undoubted lepers were sent to the settlement in two years. The mortality of the lepers in the eleven years from 1865 to 1876 was 87.2 per cent.

In January, 1880, there were seven hundred and thirty-three lepers in the settlement, besides which, according to Dr. Saxe, incipient leprosy may be found in nearly every part of the kingdom.

The danger to our country of this focus of leprosy in Hawaii will be understood when the increasing commerce and intercourse between the two countries is pointed out. In 1880, 5593 passengers landed from steamers at Honolulu, and 1928 embarked. The demand for skilled labour has brought a large number of Americans into direct contact with the Hawaiian population, and the danger from this source of the importation of leprosy to our shores is not to be underrated. Dr. Saxe's pamphlet contains a dozen photographic views of lepers, showing various stages and varieties of the disease. A. V. H.

ART. XXXVII.—*A Manual of Midwifery.* By ALFRED MEADOWS, M.D. Lond., F.R.C.P., Physician Accoucheur to St. Mary's Hospital, and Lecturer on Midwifery and the Diseases of Women, at St. Mary's Hospital Medical School, etc. *Assisted by* ALBERT J. VENN, M.D., M.R.C.P., Obstetric Physician to the Metropolitan Free Hospital, etc. 12mo. pp. 498. New York: G. F. Putnam's Sons, 1882.

THE popularity of this work is shown by the fact that this is the fourth English edition. We are not at all partial to the use of manuals, although designed chiefly for the use of students; and especially do we object to obstetrical treatises in this condensed form, for the reason that the whole subject may be presented in an octavo volume of convenient size, which shall alike answer for the student and practitioner. The author, being an obstetrician of eminence, has added to the value of his work, by the introduction of many hints and directions derived from his own experience.

The book is thoroughly British in its teachings and authorities, and therefore not so well adapted to American practice, as some others of their works which have been remodelled here. The lateral decubitus is not only recommended in ordinary labours, but is adhered to in the use of the forceps, and even in craniotomy. Although giving a tabular description of thirty-eight varieties of the forceps, no mention is made of those of Hodge, Wallace, Bedford, etc., so much in use here. In the use of the instrument the author directs that the blades shall be applied to the sides of the child's head.

Dr. Meadows is much more in favour of the Cæsarean operation than his countrymen generally are, and believes it preferable to craniotomy and less dangerous, if performed early, where the conjugate measures two inches or less. He quotes Churchill as authority, who gives 450 Cæsarean cases, with 230 women saved. We are satisfied that this is much too high, and have detected in his record of American cases a number of errors. Dr. Meadows attributes the excessive mortality in Great Britain to delay in operating; but there must be some other cause, as early cases have been much more fatal than with us. He states that, "according to statistics, it appears that in British and American practice, rather more than two-thirds of the mothers die" (page 267). This is altogether an error. The loss in Great Britain has been 81 per cent., that of America, 55½ per cent., or 19 per cent. saved, against 44¼ per cent. It would be very unfair to America to say, that the two countries had lost 183 out of 266, or an average of 68½ per cent.

In the management of rupture of the uterus, the author does not appear to have profited by the researches of Dr. Trask, of New York, not to speak of those of the reviewer. Speaking of gastrotomy, he says, "there are several cases on record where this has been successfully performed" (page 425). He appears not to have learned that twenty-one out of forty-one have been saved by it in the United States alone. Although an advocate of the Cæsarean operation, he appears to dread gastrotomy in cases of rupture, and recommends it only as a last expedient. We are confident that it is much less dangerous than the delivery of the fœtus by drawing it back through the rent as he advises. He says not a word about cleansing the peritoneal cavity, and the dangers of septic infection from the presence of escaped fluids therein.

Dr. Meadows treats of Symphysiotomy as a subject of no present interest, but simply one of historical curiosity, remarking that no one now ever thinks of performing it as a means of delivery in deformed pelves. He does not seem to have heard that this operation was revived in Naples in 1869; and that it has been performed fifty times since, or oftener than in the century prior to that year. This is a strange oversight, as Prof. Ottavio Morisani has written a large monograph on the subject; and has since presented it in a second pamphlet, as part of the scientific work done by members of the International Medical Congress of 1881.

The illustrations of the volume are generally good, but some are very badly executed; witness the left foot and leg in figs. 141, 142, and the arm and foot in 144. The right leg in the figs. 141 and 142 has the appearance of having been amputated and healed in utero. Viewed simply as a manual, the book is superior to the generality of its class.

R. P. H.

ART. XXXVIII.—*On Cancer, its Allies and other Tumours, with Special Reference to their Medical and Surgical Treatment.* By F. ALBERT PURCELL, M.D., M.R.C.S., Surgeon to the Cancer Hospital, Brompton, etc. 8vo., pp. 311.

THIS monograph discusses general topics relating to malignant growths, such as the definition of cancer, its anatomical aspect, infiltration and infection of adjacent and distant parts, methods of microscópic examination, and the classification of malignant neoplasms; and then considers in successive chapters carcinomas and sarcomas of the various organs. Occasionally other tumours, such as adenoma of the breast, are discussed, which are not looked upon as malignant, but which possess a clinical importance because of the necessity of their differentiation from cancerous affections.

In the Introduction the author speaks of the remedies that have been advanced for the treatment of cancer, and shows by examples the tedious and painful character of the caustic treatment. After a long and careful trial he believes that Chian turpentine is utterly valueless for the arrest or cure of cancer. This conclusion he reached from experiments made with the drug obtained from the very stock from which Clay received his supply. The best treatment in his opinion is operation, which he performs with antiseptic methods, according to Lister's teachings. There is added a long extract, of a half dozen pages, from Lister's paper on the Preparation of Cat-gut Ligatures. As cure by atrophy occasionally happens, he expresses the hope that at some future time a remedy may be found which will effect a cure of these malignant diseases. This is to be looked for in a constitutional remedy.

The author has the usual difficulty of defining cancer, and sometimes seems to use the word as synonymous with malignant, while again he appears to restrict it to carcinoma. He says, "Let us limit the term 'cancer' to those forms of disease which are specialized carcinoma (clinically including sarcoma and epithelioma)." His verbatim answer to, What is meant by cancer? is as follows: "It is a malignant growth, consisting of a delicate fibroid stroma, within its meshes, aggregate but not coherent cell-elements—cells, nuclei, or granules generally uniform, though often similar to natural cell-elements." It astonishes the reviewer that authors continue efforts to define a word which should have no existence in the scientific language of to-day. Cancer was employed in the ante-pathological era to signify a growth, of which nothing was known except that it was malignant. As soon as investigation showed that growths of different structure presented this characteristic the word lost its value, and now has no better claim to existence in scientific surgery, than "hives" has in dermatology or "amaurosis" in ophthalmology.

The author's views of the origin of cancer appear to consist in a belief that there is a constitutional predisposition of the tissue, but no constitutional blood-poison. He seems not to favour the theory of local origin; and does not refer to Cohnheim's hypothesis of unused embryonic cells. This criticism of his views is intentionally cautious, because the author does not express his opinions very dogmatically, but rather indulges in interrogatives.

Cancer is regarded as a disease of degenerated tissues; hence it is found very frequently in the breast and uterus, since these organs undergo functional degeneration at a comparatively early period of life.

Mr. Purcell classifies the malignant tumours as follows: A. *Carcinoma;* including, 1, scirrhoid; 2, hæmatoid; 3, melanoid; 4, colloid; 5, myxomatoid. B. *Sarcoma;* including, 1, spindle-celled; 2, round-celled; 3, giant-celled; 4, mixed-celled; 5, small round-celled (glioma). C. *Lymphadenoma:* D. *Epithelioma;* E. *Psammoma.*

That which may be called the second portion of the book, beginning at page 98, describes the malignant tumours as they affect the different external and internal organs. In this part of the treatise the author shows an equal familiarity with the microscopical and clinical aspects of morbid growths; and has, therefore, produced a series of chapters which are exceedingly interesting, and of great practical value. If space permitted, long extracts could be made which would convince the reader of this masterly combination of pathological science and clinical medicine and surgery; which is the more appreciated because so unusnal in the literature of the present decade. The first part of the book deals apparently with questions too philosophical for the tastes of the author, and is, therefore, written badly; but the second portion is evidently the work of a practical observer, who has had abundant microscopical and clinical experience.

The remarks on treatment cannot fail to furnish suggestions to those who refer to the treatise for information regarding cases met with in daily practice.

The wood-cuts are rather poor, and the style of diction sometimes obscure (see top of page 152); but in the second portion of the volume there is so much of value that the reader forgets his uninteresting plodding through the early chapters, which will, perhaps, be improved in subsequent editions.

J. B. R.

Art. XXXIX.—*Ministro d'Agricoltura, Industria e Commercio. Direzione di Statistica, Annali di Statistica,* Serie 2nd, vol. 6, 1881. *Geografia Nosologica Dell' Italia.* Studio del dottore Giuseppe Sormani, Professor d'Igiene nella Regia Universita di Pavia.

Administration of Agriculture, Industry, and Commerce. Direction of Statistics, Statistical Annals, Nosological Geography of Italy, prepared by Dr. Giuseppe Sormani, Professor of Hygiene in the Royal University of Pavia. 8vo. pp. 335. Rome, Eredi Botta, 1881.

Dr. Sormani having been very favourably impressed with the value and importance of the statistical atlas of the United States compiled from the census of 1870 by Francis A. Walker, conceived the idea of doing a similar work for his own country, and prepared from the census of Italy the volume under examination, for which he received from the Royal Lombardic Institute of Science and Letters a prize of 1500 lira, and a silver medal. The original paper was illustrated by an atlas of 80 plates; the volume here noticed contains seven. These all relate to the military service of the country, and exhibit at a glance, by the lightness or density of colour in the different provinces, the relative proportions of those disabled by reason of the following conditions or diseases. 1. Scald-head, most abundant in Southern Italy, maximum 30 or 40 to 1000. 2. Caries of the teeth, most abundant on the northern coast line, 8 to 13 per 1000.

3. Goitre and enlarged neck—Northern Italy, max. 100 to 320 to 1000. 4. Varices—Northern half of Italy, max. 30 to 41 to 1000. 5. Chronic diseases of the abdominal viscera, most abundant in the hotter districts, 30 to 50 to 1000. 6. Scrofula—Northern district, max. 0.8 to 11 per 1000, and, 7. Deficient height—Southern Italy and Northern frontier, max. 300 to 430 to 1000.[1]

We will pass over the military statistics, and take up some of those which have a more general interest. The average annual mortality of the city of Turin is computed at 26.93 per 1000; Milan, 32.66 per 1000; Venice, 31.70 per 1000; Bologna, 30.41; Genoa, 30.42; Leghorn, 27.17; Rome, 33.38; Naples, 33.23; Catania (Messina), 31.08.

The deaths from phthisis and tuberculosis per annum, ascertained by the average of a series of years, were for Turin 2.39 per thousand inhabitants; Milan, 3.69; Palermo, 2.64. The minimum record (1.42) is that of Catania; and second, of Genoa, 2.00; Bologna, Milan, and Venice vary but slightly, ranging from 3.69 to 3.84, the maximum. Compared with these, we find the mortality by phthisis alone, to be in Glasgow, 7.0 per thousand; Edinburgh, 4.9; Paris, 4.1; Berlin, 3.8; Dresden, 3.0; and London, 2.9 (which is the average of England and also of Algiers).

The deaths from phthisis alone, in the chief northern Italian cities, taking the average of a series of years, number as follows, viz., Venice, 3.88; Padua, 3.03; Milan, 3.53; Genoa, 2.55; Turin, 2.58; and Verona, 2.10 per thousand of inhabitants.

Goitre and *Cretinism*.—Although these two affections bear an intimate relationship to each other, they are frequently independent, the cretin being often non-goitrous. In the cretin census of Piedmont made in 1845, there were 3909 goitrous to 2089 non-goitrous cretins enumerated. According to Baillarger (1873) France contained 500,000 goitrous subjects, and 120,000 cretins and idiots. In Piedmont, Liguria, and Savoy there have been found 7084 cretins and 21,841 subjects of goitre; the cretins averaging 2.7 to 1000 inhabitants, and the goitrous subjects 8.3. The largest number of cretins is found in the vale of Aosta, *i. e.*, 1418 or 27.9 per thousand. Of 2,000,000 Italians liable for military service, 4121 were exempted for cretinism and idiocy, and 42,862 for goitre.

Alcoholism.—This cannot be ascertained by the number of deaths attributed to intemperance in mortuary reports, as the causes of death are generally attributed to some immediate condition, such as cerebral congestions, convulsions, etc., rather than the primary cause. Italians are not given to intemperance in anything like the proportion which prevails in Great Britain and America. The number of confirmed drunkards as given for the year 1875, by Dr. Ernesto Terzi, was 15,895, or 0.55 to each 1000 inhabitants; of these the northern parts of the kingdom contained more than one-half.

Apoplexy.—The proportion of deaths from this disease amounts to about 100 to 1,000,000, or 0.10 to 1000. There were in ten years 1868–'77; 26,753 deaths. In England the mean average is 1.35, in Ireland 1.36, in Berlin 1.60. In the Italian cities the range is much higher than the general average, viz., Mantua, 1.90; Rome, 1.75; Turin, 1.61; Milan, 1.47; Bologna, 1.36; Palermo, 0.94.

Hernia.—20.8 of all men in Italy, per thousand, as shown by the rejections for the army in a period of fourteen years, are affected with hernia, varying in different localities, from ½ to 3 per cent.

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[1] The military minimum stature in Italy is 5 ft. $1\frac{7}{16}$ in. The number rejected in all Italy was 282,993, or 121.3 to each thousand "inscribed."

Suicide.—The average for Italy per an. is 33.5 in a million. Compare this with Spain 17 (average for 4 years), there were 36 in 1880; Russia, 29; Holland, 35.5; Norway, 73; France, 150; and Denmark, 258.

Homicide.—In this the comparison is reversed, Italy 67.5 in 1,000,000; Austria, 33.8; Belgium, 16.5; Prussia, 19.5; and England and Wales, 16.6. Of suicides Austria presents 86.5; Belgium, 72.2; Prussia, 144.6, and England, 67.9, per million.

General Mortality.—Average per annum in ten years 793,914, or 29.6 per thousand. Compare with Ireland, 17.2; Norway, 17.3; Denmark, 19.6; Greece, 20.9; England and Wales, 22.0; Belgium, 23.2; France, 24.0; Holland, 24.9; Prussia, 27.2; Spain, 31.2; Russia, 36.7; Hungary, Croatia, 38.0; and Slavonia, 43.7.

To the hygienist, this work of Prof. Sormani is one of much value and interest. R. P. H.

ART. XL.—*Health Reports:* 1. *Fourth Annual Report of the Connecticut State Board of Health for the fiscal year, ending November* 30, 1881, *with the Registration Report of* 1880. Hartford, 1882. pp. 300, pp. 100.

2. *Second Annual Report of the State Board of Health of South Carolina for the fiscal year ending October* 31, 1881. Charleston, 1881. pp. 304.

THE report from *Connecticut* opens with a general summary of the progress made and work done in hygiene during the past year, both of which are pronounced very encouraging. The voluntary sanitary associations, which have sprung up in various parts of New England, in imitation of Dr. Storer's at Newport, are justly praised, and hailed as the evidence of an awakening of public opinion to the immense importance of systematic care of the health, which is highly gratifying. The Connecticut Board has had more applications from local boards of health for advice the past twelvemonth than during any previous year, and the zeal and activity displayed are mentioned as being quite remarkable. In regard to the prevalence of diseases in Connecticut, it is stated that the deaths from typhoid fever, and from diarrhœal diseases generally, have been more numerous, and that smallpox has been introduced into many of the cities and towns, but being for the most part carefully managed, according to the excellent "Instructions" (issued in pamphlet form by the State Board), in but few instances has there been any spread of the disease. The number of deaths from scarlet fever and from malarial affections has increased, but diphtheria has been rather less abundant and less fatal. A few cases of poisoning from aniline dyes, from cosmetics, and from arsenical wall papers are noted. A special investigation in regard to trichiniasis appears in the report, and others respecting the "Bad taste and odor of potable water," and one on "School Hygiene," are announced as being in preparation.

The body of the work contains, first, an interesting abstract of the proceedings of the American Public Health Association, at its Savannah meeting, with which our readers are doubtless familiar. This is followed by a paper on the sewerage of Stamford, by Henry R. Towne, containing an opinion from Col. Geo. E. Waring, in which he urges the separate system, on the general plan of that adopted at Memphis, Tenn., and the pumping of the sewage from a reservoir so arranged as to secure sufficient fall into a main which will empty it beyond low-water mark. Prof. C. A. Lindsley, M.D., Medical Department of Yale College, contributes a valuable and timely essay on vaccination, in which, after a brief description of what Jenner's great discovery has done towards preserving mankind from smallpox, the author considers sundry collateral questions, and concludes that compulsory vaccination is most satisfactory, that bovine virus is safer, more protective, and less apt to transmit erysipelas than humanized virus; that therefore it is an important question whether reliable animal vaccine virus should not be systematically provided by State or national authorities; and finally that a primary infantile vaccination with good bovine virus is fully protective until the age of puberty, and vaccination then will protect through life (an opinion which we fear is not supported by all the facts.)

Dr. C. W. Chamberlin, Secretary of the Board, follows with an elaborate article on malaria in Connecticut, in which he maintains that epidemics of malarial diseases have appeared at intervals from the time the State was first settled; that the theory of the causation of ague by the *bacillus malariæ* of Klebs and Crudelli, though not proven, has much evidence in its favour; and that when malarial affections appear in a locality, their tendency is to diminish the frequency of typhoid, and to render neuralgia and bilious diarrhœa more common.

The paper on malaria in Western Connecticut, by Egbert L. Viele, of New York, closes with an urgent plea for a complete survey of the State, with a view to its proper drainage, for the purpose of preventing malarial disease.

The last important essay (preceding a digest of the sanitary laws and the Registration Report) is one of the "Natural History and Pathology of the Trichinous Infection of Man and Animals," by Noah Cressy, M. D., V.S., of Hartford. In his articles, after an account of the discovery of this dangerous parasite (from which we regret to observe, mention of the labours of Prof. Jos. Leidy, of Philadelphia, is omitted), its natural history in animals and in man is considered, and our great means of prophylaxis, that of thorough cooking, suitably insisted on. This paper is well illustrated by several instructive and generally accurate figures and plates.

The *South Carolina* Health Board, notwithstanding its machinery is new, and not fully adjusted to the circumstances under which it operates, presents a very creditable and useful report. The volume opens with an earnest address to the legislature on the "Sanitary needs of the State," in which are ably urged the importance and value of public hygiene. In this document the special wants of the South Carolinians are declared to be advice and assistance in removing the three great scourges which "have afflicted this country with countless woes, namely, *bad air*, *bad whisky*, and *bad biscuits!*" but an effort is, we rejoice to learn, also proposed towards fulfilling the subordinate duties of restraining nuisances, regulating the practice of medicine, establishing inter-state quarantine, remodelling sewerage works, controlling abattoirs, providing for inebriates, etc. Nearly half of the volume is occupied with reports of sub-boards, committees, and reprints of laws in relation to different sanitary subjects, over which the Board of Health has jurisdiction, chiefly of local interest. Among the articles in the latter part of the book are to be noted an enthusiastic paper by C. R. Taber, M.D., on "A Knowledge of Bacteria, the basis of Scientific Hygiene," in which the alluring possibilities opened to our view by the discoveries of Obermeier, Pasteur, Klebs, and Wood, glitter with a renewed lustre. Prof. J. Ford Prioleau, M.D., contributes an admirable essay upon Scarlatina, and an account of the "Scarlatinous Epidemic of 1881 at Charleston, S. C.," by which we are informed, that this outbreak was the most severe that had ever visited the city, and was remarkable for the violence and suddenness of its invasion. The fatal attacks numbered 117, and were distributed through the spring and summer months; the total number of cases is estimated at nearly 1200. Dr. Prioleau also furnishes an article on "Break Bone Fever, or Dengue," valuable as containing the observations of an eye-witness to an extensive epidemic. In an interesting paper by Dr. P. A. Wilhite, of Anderson, S. C., on the "Etiology and Pathology of Intermittent and Remittent Fevers," the author, with a refreshing independence of both the older theoretical and newer microscopical authorities, contends that there is no such thing as malaria, its supposed effects being due simply to a humid atmosphere. Articles on the "Hygiene of the Eye in School Children," by Geo. Howe, Jr., M.D., of Columbia, S. C.. and on "Ventilation of School Rooms," by B. W. Taylor, M.D., of Columbia, are good compilations of existing knowledge in regard to these sadly neglected subjects, so important to the coming generation of Americans; and essays on "Forestry in South Carolina," by F. F. Gary, M.D., and on the "Causes and Prevention of Liver Complaint," by S. Barnat, M.D., ex-President of the S. C. Medical Association, are thoughtful papers well worthy of careful consideration. J. G. R.

ART. XLI.—*A Manual of Practical Normal Histology.* By T. MITCHELL PRUDDEN, M.D., Director of the Physiological and Pathological Laboratory of the Alumni Association of the College of Physicians and Surgeons, New York, etc. 16mo., pp. 265. New York: G. P. Putnam's Sons, 1881.

THE favourable first impression made by this little manual is increased, rather than diminished, by a closer examination of its contents. The book has been prepared for the use of those students and practitioners who, with a limited amount of time at their disposal, wish to acquaint themselves, in a practical way, with normal histology, and is not designed to take the place of more elaborate treatises on the subject. To accomplish these purposes it is well adapted. With description of preparations made according to the methods recommended, and written for the most part at the microscope table, an accuracy and naturalness are secured which become a safe guide to the student, working either alone or under the eye of a teacher.

The subjects treated include: 1. An introduction, in which general methods for preserving tissues and preparing them for study are considered; then the cell in general. 2. Connective tissue. 3. Embryonal and mucous tissue; fat tissue; reticular connective tissue. 4. Cartilage; bone; teeth. 5. Blood and lymph. 6. Muscular tissue. 7. Nerve tissue. 8. Bloodvessels and lymphatic vessels. 9. Lymph nodes; spleen. 10. The gastro-intestinal canal. 11. Submaxillary gland and liver. 12. Suprarenal capsules; thyroid gland. 13. The respiratory apparatus. 14. The kidney. 15. The generative organs. 16. The central nervous system. 17. The skin and its adnexa. 18. The eye. It will be seen that these subjects include all that it is important for the practitioner to understand, and by following the directions laid down in Dr. Prudden's book he may acquire, without a teacher, such knowledge of them as will enable him sufficiently to understand the pathology of the diseases of the tissues and organs involved. J. T.

ART. XLII.—*A Treatise on the Diseases of Infancy and Childhood.* By J. LEWIS SMITH, M.D., Clinical Professor of Diseases of Children in Bellevue Hospital Medical College, etc. etc. Fifth edition, thoroughly revised. With illustrations. 8vo. pp. xvi., 828. Philadelphia: Henry C. Lea's Son & Co., 1881.

IN a review which appeared in the April number of this Journal for 1869, we expressed the opinion that Dr. Smith's work on the Diseases of Childhood, although incomplete, was a valuable addition to the existing treatises on this subject, inasmuch as it embodied the experience of a close and thoughtful observer, whose opportunities for the study of this class of diseases had been unusually extended. The fact that it has passed through four editions, and that a demand for a fifth edition has made itself felt within twelve years of the time of the appearance of the first, will, we think, be accepted as proof that we did not there exaggerate its merits. The book is, however, no longer open to the charge of incompleteness. In each successive edition an effort has been made to supply the deficiencies of its predecessors, and this has been done with so much success that its claim to be a complete treatise on the Diseases of Childhood will no longer be disputed.

The most important addition which the author has made to this edition is a chapter in which he gives the results of a series of experiments, and observations conducted at the New York Infants' Asylum and the New York Foundling Asylum, to determine the quantity of food required in infancy and childhood, to insure normal and healthy growth. The chapter on rachitis has been almost entirely rewritten; important additions have been made to that on pleurisy, and throughout the book will be found abundant evidence that it has been subjected to a careful and intelligent revision. J. H. H.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

Congenital Malformations of Intestines.

Of all malformations due to arrest or perversion of the normal developmental processes, that which gives rise to the retention of a diverticulum from the ileum, representing the relic of the omphalo-mesenteric duct, is perhaps the most common. In the adult this diverticulum is generally seated about three feet above the ileo-cæcal valve; it springs, as a rule, from the convex surface of the intestine, and is not only formed by walls precisely of the same nature as the bowel, but is generally also furnished with a small fold of serous membrane on one side —a miniature mesentery. In length it varies from half an inch to five or six inches, and in the latter case may be attached to the under surface of the umbilicus, with or without structures representing obliterated omphalo-mesenteric bloodvessels. It is usual to call such diverticula by the name of Meckel, to whom belongs the credit of having (in 1813) first correctly interpreted their nature. Since he wrote it has been generally admitted that he was right in attributing such diverticula to the persistence of a portion of the vitelline or omphalo-mesenteric duct—a structure which in the human fœtus is present only for the first six weeks or so of embryonic life. Naturally one may expect to meet with variations in the form and disposition of such fœtal relics, owing to the supervention of various disturbing influences. A fairly complete but concise account of all the malformations that may so arise is contributed to the last number of Virchow's *Archiv* by Prof. Roth, of Breslau, in which he arrives at the following classification: 1. The ordinary Meckel's diverticulum, which may lie within the abdominal cavity, within a hernial sac, or between the folds of the mesentery—the latter a very rare condition, of which he gives an instance. 2. Adherent diverticulum, either to the umbilicus, by the remains of the omphalo-mesenteric vessels, or more rarely to other parts of the abdominal cavity. 3. Diverticula which, instead of being closed at their free extremity, remain persistently open, the closed end having sloughed away with the separation of the umbilical cord. This opening may be at the umbilicus, forming an intestinal fistula, or in the prolapsed portion of the diverticulum, or in the midst of a fleshy appendage seated at the umbilicus (of which he describes an interesting case), or complicated by hernial prolapse in that region. 4. Peculiar cysts composed of walls reproducing the epithelial and muscular elements of the intestine, and filled with serous-looking fluid. These "entero-cystomata" may retain their connection with the intestine, or they may become detached from it, and even be met with in the thoracic cavity, owing to their formation taking place before the division of the pleuro-peritoneal cavity into two sacs. The following is a brief account of the conditions found by Dr. Roth in two such cases: One was that of a male child sixteen months old, healthy till two months before death, which occurred from gangrene of the pedicle of the cyst and peritonitis. Within the abdomen an oval cyst lay in front of the mesentery and behind the omentum which was adherent to it. It was furnished with a pedicle, eleven millimetres long, attached to the concave border of the ileum, sixty-six centimetres above the ileo-cæcal valve. Through this pedicle communication existed between the bowel and the cyst, which contained not only some brownish-red slimy fluid, pus, blood, and epithelial cells, but starch-granules and muscle-fibres from the ingesta. The cyst was lined by columnar epithelium, villi, and Lieberkühnian follicles, beneath which was a compact submucous layer and a layer of muscular fibres, disposed circularly and longitudinally. The cyst then was nothing but a greatly dilated free extremity of a Meckel's diverticulum, which was itself provided with a short mesentery. The other case was one where a diverticulum occurred within the mesentery parallel to the gut from which it sprang, whilst three distinct cysts occurred elsewhere. A small one, not far from the diverticulum, lay also between the folds of the mesentery, whilst two of much larger size occurred at a distance from their supposed seat of origin—one, namely, behind the peritoneum in the abdomen, the other occupying the posterior mediastinum and compressing the lungs. These two cysts may not have been derived from the ileum, but may have been formed *in loco* by abberant development in the œsophagus or duodenum. But, like the smaller one, they were lined by columnar cells, and had plain muscular fibres in their walls.—*Lancet*, January 21, 1882.

A New Formed Element of Mammalian Blood.

The discovery of a new and important constituent of the mammalian blood has just been announced by a distinguished investigator of blood formation—Professor BIZZOZERO, of Turin. This new element is not the same as the invisible corpuscle of Norris, but presents nevertheless somewhat similar characters. If the course of the circulation is watched in the small vessels in the mesentery of chloralized rabbits and guinea-pigs, there are seen, besides the ordinary red and pale corpuscles, third elements—very pale, oval, or round disk-shaped or lenticular bodies, one-half or one-third the diameter of the red corpuscles, among which they are scattered. "Blutplättchen," Bizzozero proposes to call them. They have hitherto escaped notice, probably because they are so colourless and translucent, less numerous than the red, and less visible than the white corpuscles; and on account of the difficulty of observing the mammalian blood in the course of the circulation with a high magnifying power. They are to be observed also in freshly drawn blood, for the most part aggregated around the colourless corpuscles, or, ascending to the upper layer, they adhere to the cover-glass. They change, however, with great rapidity, rapidly become granular, and appear to be the source of the small granule masses which have been described by many observers. The corpuscles can be preserved unaltered in form for more prolonged examination by certain reagents, as, for instance, by a solution of chloride of sodium tinted with methyl-violet. They are to be found also in human blood, but they undergo alterations with extreme rapidity, and the best method of observing them has been found to be by placing a drop of the above solution over the puncture, and then squeezing the blood out, and immediately examining it under the microscope.

Bizzozero has been unable as yet to ascertain anything regarding the origin of these elements. It is exceedingly improbable that they are in any way derived from the ordinary colourless corpuscles, because they possess a very definite and characteristic form, and the leucocytes contain no element from which these objects could be derived. A comparison between the blood in the vessels and out of the body thus clears up the origin of the granule heaps, which some regard as products of the destruction of leucocytes, and others, as Hayem, ascribe to changes in peculiar flat corpuscles. The latter view is undoubtedly correct, although Hayem does not seem to have observed these elements in the circulating blood, since he describes them as biconcave disks which are transformed into red corpuscles, and calls them "hæmatoblasts." The objects regarded by Bizzozero as the source of the granules possess no stroma, and never contain hæmoglobin; they differ therefore from the hæmatoblasts of Hayem.

The new elements seem to play an important part in the functional alterations of the blood. They are increased in certain morbid conditions—as, for instance, after bleeding,—and play an important part in the production of thrombi. They constitute the chief part of the white clots in the mammalia, since they give rise to the granular material which is seen between the pale corpuscles, and which has hitherto been ascribed to the degeneration of fibrin. In the process of coagulation these elements appear to exert the influence which has been attributed by Mantegazza and Schmidt to the colourless corpuscles. Schultz, Ranvier, Hayem, and others have noted that the reticulated threads of fibrin often present at their junction these groups of granules, and hence inferred that the latter were produced by the degeneration of the fibrin. Hayem, however, found that certain fluids which hinder coagulation preserve unchanged the form of his "hæmatoblasts." It will also be remembered that A. Schmidt asserted that the coagulation of the blood is effected by the white corpuscles, which by their destruction yield the granules, and so constitute a considerable part of the substance of the clot. Bizzozero, however, now urges that the formation of the clot is due, not to the white corpuscles, but to these new elements. He has never been able to satisfy himself of the wholesale destruction of white corpuscles assumed by Schmidt. Leucocytes are comparatively few in the circulating blood, and he could never observe any destruction of them after the blood was drawn, provided it was mixed with an indifferent fluid, such as a saline solution. The time at which coagulation occurs in a given drop of blood corresponds closely to that at which these new elements present the degenerative changes. The fluids which retard or prevent coagulation—solutions of carbonate of soda or of sulphate of magnesia, for instance—also hinder the granular transformation of the new corpuscles. The indifferent solution of chloride of sodium does not preserve them, but one to which methyl-violet has been added does so. With the former the blood coagulates in a quarter of an hour, with the latter it remains liquid for twenty-four hours. If a vessel of a living animal is included between two ligatures, the blood within it remains liquid for hours, and during the whole time these elements preserve their characteristic form, although in blood outside the vessels they undergo degeneration in a few minutes. If blood is "whipped" and the fibres employed are withdrawn before coagulation commences, and are then immersed in a liquid capable of preserving the new elements unaltered, it will be found that they are covered with a thick layer of the new elements, among which are very few white corpuscles. If the whipping has been continued longer, these elements are found to have undergone degeneration and to remain on the layer of fibrin. From these facts it follows that whereas the ordinary white blood-corpuscles present no noteworthy changes at the commencement of coagulation, these new elements are considerably altered, and where they adhere, there the fibrin is deposited, and, finally, that all agents which hinder their transformation retard also the coagulation of the blood. The evidence is thus very strong that this coagulation—that is, the formation of fibrin—takes place under the direct influence of these corpuscles.—*Lancet*, Jan. 21, 1882.

Formation of Red Blood-Corpuscles.

The authority with which M. MALASSEZ speaks upon all subjects connected with the constitution of the blood confers importance on a summary of facts relating to the formation of red blood-corpuscles in bone marrow, which he has recently communicated to the Société de Biologie. This summary contains an account of the results attained in a series of investigations on the subject, and embody facts and theories of undeniable importance. It is generally admitted, since the discoveries of Neumann and Bizzozero, that the red cells discovered by the former in the bone marrow of the mammalia are embryonal corpuscles, but various opinions are held regarding the origin of these cells and the mode in which they are transformed into red blood-disks. It is to these two points that his investigations have been especially directed. The first hypothesis which was advanced—and it is still accepted by many authorities—is that the red cells are transformed into corpuscles by the gradual disappearance of their nuclei. If the process is studied in animals in which the red corpuscles are nearly the same size as these cells, forms of the latter may be observed in which the nuclei appear to be in process of disappearance. But if methods are employed which leave the structure of the cells unaffected, and especially if the examination is made in animals in which the red blood-disks are considerably smaller than these cells, such intermediate forms cannot, according to Malassez, be discovered. Moreover, the corpuscle is so much smaller than the cell, that a transformation of one into the other would imply either a contraction of the protoplasm of the cell, or a change by which this breaks up and forms more than one globule, and each assumption is destitute of evidence. Hence the conclusion is drawn that this theory of transformation by destruction of the nucleus is untenable. Rindfleisch, from appearances which he observed in some cells, concluded that the change does not consist in a destruction of the nucleus, but in the exit of this from the cell. This appearance is stated by Obrastzow to be due to an alteration of the cells analogous to that which Donné long ago noted in the corpuscles of the frog treated by water. It is probably an artificial phenomenon, for it cannot be observed in recent or well-preserved specimens.

In studying the formation of blood-corpuscles in the spleen, Malassez and Picard observed cells, charged with hæmoglobin, which presented protoplasmic buds having the aspect of red corpuscles, but spherical in shape, and it was suggested that these, being detached, might become separate blood-disks. Malassez has succeeded in finding a similar appearance in preparations of bone marrow, which were made in such a manner as to preserve undisturbed the form and structure of the tissue elements. A fragment of fresh marrow was teased out on the object bearer without the addition of any reagent. Sometimes the glass slide was merely touched with a fragment of marrow. The preparation was then exposed to the vapour of osmic acid. The tissue elements being thus fixed, they coloured with picrocarmine, or with eosin and logwood. In the hare the hæmoglobic cells are very large in proportion to the red corpuscles, and they may present several minute buds. In the rabbit, calf, cat, and child the cells are smaller, and usually the bud is single. The most developed prominences tend to become constricted and pedunculated, and thus to assume the appearance of spherical corpuscles. Their substance possesses the same homogeneity, the same refractive power, the same colour, and presents the same histo-chemical reactions as do the red blood-corpuscles. The only difference is in their shape. But the normal globules, which are biconcave, may under certain conditions of humidity, etc., swell up, become concavo-convex, and, finally, biconvex and spherical. It does not seem inconceivable, therefore, that these buds, becoming detached, may undergo the converse transformation; and the difference in shape does not constitute adequate ground for the rejection of a theory which can plead in its favour a high degree of intrinsic probability.

Regarding the origin of the red cells of the marrow, certain facts appear to be well established. They may be seen in every stage of nuclear division, and it is therefore, generally admitted that they are capable of fissiparous multiplication. But their primary origin is still involved in considerable obscurity. The earliest theory, which is still extensively held, is that they are derived from white blood-corpuscles. But the blood contains several varieties of leucocytes. Malassez believes that we must reject the idea that they come from ordinary leucocytes, with a finely granular protoplasm, and which appear polynucleated when they are treated with osmic acid; and also the view that they are formed from the white corpuscles which stain with eosin, because these elements are completely different from the red cells, and in properly prepared specimens no intermediate forms can be discovered. The origin of these cells from the hyaline leucocytes is much more probable, but is destitute of evidence. Preparations made in the above-described method show, however, a perfect series of cell-forms, at one extremity of which is the red cell, and at the other is an element of very different aspect. The forms which resemble the red cell are clearly more differential and specialized than the others, and they may, therefore, be regarded as more advanced in development. All the forms may be referred to three principal types. Those which are nearest to the hæmoglobic cell differ in their more hyaline protoplasm and smaller amount of hæmoglobin in the reticulated form of their nuclei, and in its slighter affinity for colouring reagents. Another form, farther removed from the hæmoglobic cell, possesses a less abundant protoplasm, still less coloured and finely granular, a nucleus relatively large, more granular, and tinting still less than those of the last group. In the third form the nucleus occupies the whole, or almost the whole of the cell, as if its substance were diffused through the protoplasm. From the serial character of these forms Malassez concludes that they, and not the leucocytes of the blood, are the origin of the medullary hæmoglobic cells. The entire succession of forms may be regarded as a progressive development, resulting in the formation of an element which possesses in high degree a special function, that of respiration.

In the animals which possess nucleated red corpuscles the process of formation of these appears to resemble perfectly that of the hæmoglobic cells in animals which possess only non-nucleated blood-disks. The cells of origin are the same (and were partially recognized by Bizzozero and Torre), and they present the same transformations, nuclear and protoplasmic. The process does not, however, advance beyond the formation of the red cell. This does not bud, does not form globules; it becomes flattened and passes into the circulation, constituting itself the red corpuscle. Thus the nucleated and non-nucleated red corpuscles are not elements of identical nature, although belonging to the same family and fulfilling the same purpose.

Fuller details of these important researches are to appear in the next number of the *Archives de Physiologie*. The assertions of Malassez will, no doubt, meet with criticism; but he is to be congratulated on having furnished an explanation of the process of blood formation far clearer than any which has yet appeared.—*Lancet*, Jan. 14, 1882.

Mechanical Excitation of the Optic Nerve.

It is commonly believed that, like most other nerves, the optic is sensitive to mechanical stimulation, that thus sensations of light may be excited, just as they are by a similar stimulation of the retinal elements. The question has been recently re-examined by Schmidt-Rimpler, who comes to the conclusion that the current opinion is true, although the grounds on which it is based are not altogether correct. It is usually asserted that division of the nerve in enucleation of the eyeball causes a sensation of light. The fact is, however, doubtful. Rothmund, of Munich, has several times extirpated an eyeball without anæsthetics, and has never known the division of the nerve to cause a sensation of light. It is probable, however, that in many such cases the fibres of the nerve are totally degenerated. A more conclusive instance has been met with by Schmidt-Rimpler. A large part of the contents of one orbit had to be removed on account of epithelioma. The eyeball was healthy, and vision with it considerable, but it could not be saved. The patient was perfectly conscious when the nerve was divided, and was asked if he experienced any sensation of light, but replied in the negative. It is suggested that the supposed stimulation of the nerve on division was really a stimulation of the retina in consequence of the tension of the globe by its necessary fixation at the moment of division of the nerve. Another fact which has been advanced as proof that the optic nerve is sensitive to mechanical stimulation, is the sensation of light which may be produced by extreme lateral movements of the eyeball. It has been referred to the stretching of some of the fibres of the optic nerve. But Schmidt-Rimpler points out that the sensation thus produced is that of a circle of light with a dark centre, and that its apparent position corresponds nearly to the point of entrance of the optic nerves. It is difficult to conceive that the fibres which end near the disk have a course so separate trom others that they are only stimulated when the nerve is stretched. It is more probable that the phenomenon is due to extension of the sheath of the optic nerve, which pulls upon the sclerotic around the entrance of the optic nerve, and so stimulates the retinal elements. The absence of reaction on division of the nerve does not, however, exclude altogether its mechanical sensibility, since other nerves, motor and sensory, which certainly possess this sensibility, may not react if quickly divided. That sensations of light may be produced by mechanical irritation of the nerve is shown by some observations made by Schmidt-Rimpler on persons from whom an eye had been removed not long before. A blunt instrument was pressed against that part of the orbit in which the stump of the nerve was situated. The observations were made in a room almost completely dark. Of six persons, in two pressure on this spot always caused a flash of light on the side of the enucleated eye. One of them averred that the sensation exactly resembled that which he had before experienced when the eyeball was galvanized. The same patients experienced a similar sensation when the stump of the nerve was galvanized. The negative result in other cases may be explained by more complete atrophy of the nerve, or greater retraction of the stump. These positive observations seem to establish conclusively the mechanical excitability of the optic nerve.—*Lancet*, Feb. 4, 1882.

"*Alkapton*" *in Urine.*

At the last meeting of the Medical Society of the King and Queen's College of Physicians in Ireland, Dr. GEORGE C. ARMSTRONG exhibited a specimen of the urine of a little girl, apparently in perfect health, whose mother he had attended three years ago in the worst puerperal convulsions he ever saw. The mother remarked that the child's urine, although perfectly normal in appearance when first passed, on being allowed to cool assumed a deep colour, and stained the child's linen. He sent some of the urine to Professor Tichborne, who had made the following analysis: "The specific gravity of this urine at 60° Fahr. was 1025. Albumen was absent. It was acid to test-paper, and on standing gave a slight deposit, consisting of urate of ammonia and a little mucus. The urea was scanty, and not sufficient to account for the high gravity—it was 1.2 per cent., or 5.25 grains per fluidounce This urine presented a great peculiarity; it contained a substance which is only met with occasionally, and which has been termed alkapton. Bödeker met with a case, and Lionel Beale mentions a case in which Dr. Johnson found it in the urine of an infant. This body stains the linen, particularly when the urine becomes alkaline. It behaves like sugar, and reduces copper, and probably it may be viewed in a somewhat similar light pathologically. Estimated as a sugar, it would give about eight grains to the fluidounce. The urine was examined for the bile reactions, but gave none." Dr. Armstrong said he put some of the urine into small bottles, and having hermetically sealed them, left one exposed to light and air, and put the other into a dark place. The latter specimen, after six hours, was not changed in any way.

The Vice-President (Dr. J. W. Moore) said that, although this urine after a manner "behaved like sugar," as Dr. Tichborne's analysis stated, yet the reaction was very different. Under the influence of liquor potassæ, without the aid of heat, it struck a dark brown colour. Urine containing grape-sugar, according to his experience, did not change when liquor potassæ was added to it, except under the influence of heat. Again, with sulphate of copper the reaction of the urine was very incomplete—not at all so complete as that given by grape-sugar. The results of the microscopic examination of the deposit of the urine were completely negative; the deposit he experimented with consisted of a little mucus, epithelium, and a few small oil globules, the presence of which may have been accidental. Dr. Walter Smith tested, before the Society, samples kindly supplied to him, and pointed out that the results confirmed the statements originally made by Bödeker in reference to so-called "alkapton" in urine. These are —1. Strong alkalies darken the urine without the application of heat, and the coloration proceeds from the surface of the liquid downwards, *i. e.*, oxidation co-operates with the alkali. 2 Reduction, at least partially, of the copper test. 3. Non-fermentation with yeast. The term *alkapton* is, it is presumed, derived from *alkali* ἀπτω (fasten or bind), from its relation to alkalies; but the word conveys no real information, and was given at a time (1861) when the physiological chemistry of the urine was very imperfectly understood. From various considerations Dr. Smith thought it probable the peculiar substance or substances in the urine exhibited belonged to the "aromatic series" of chemical compounds, the physiological relations of which group have been investigated with remarkable success during the past five years. Pending further investigation it would be premature to express a definite opinion on the subject in question.—*Med. Times and Gazette*, January 21, 1882.

The Formation of Bone.

The well-known experiments of Syme in Scotland and of Ollier and Duhamel across the Channel long ago demonstrated the power of the periosteum in forming new bone. Ever since these demonstrations it has been a question whether the periosteum is the sole agent in forming the ossifying callus in cases of fracture; also whether the lymph in the medullary canal is formed *in situ*, or is forced in from without through the fissures in the bone (as maintained by Lebert and Maas).

Several series of experiments have been undertaken to settle this question, and hitherto the results arrived at have been somewhat opposing. Wegner and Busch, the one by giving phosphorus to young animals, the other by the injection of mercury into the nutrient artery of a bone, have obtained consolidation of the whole bone, while Ollier and Maas, in oft-repeated experiments on the effect of transplanting marrow under the skin, between muscles, and into a serous cavity, invariably failed to get new bone formations. Goujon, Baikow, and Bruns have all repeated these transplanting experiments, and the two latter have obtained some very remarkable results. Baikow has only published a preliminary report of his experiments, but Bruns details his results, which closely agree with those of Baikow, to the last German Congress of Surgeons in Berlin.

Bruns used young animals for his experiments, and first removed a piece of the shaft of the femur or tibia, and then by squeezing it in a vice split it longitudinally, and was so able to remove a continuous cylindrical piece of medulla uninjured. This was planted in a freshly made wound under the skin, which was then carefully sutured. Out of sixty experiments in which the marrow was taken from one animal and transplanted in *another*, not once was any growth of bone found, but at the end of three to six weeks a mere shrunken trace was all that was left of the inserted tissue, which was at once destroyed by suppuration of the wound. Out of nineteen similar experiments, all performed on dogs, in which the excised marrow was planted in a wound in the *same* animal, three failed from suppuration, in four the marrow was simply absorbed without any other local result, and in the remaining twelve—or 75 per cent. of those cases where the marrow was not at once destroyed—a piece of bone about one-half the size of the transplanted marrow was formed. In these successful cases there was a good deal of swelling around the wound for a few days, but in about fourteen days this had subsided, and by puncturing the nodule left, bone could be detected. The ossification was found often to commence in several centres, which blended into one about the twenty-first to the twenty-fourth day. A microscopic examination of the specimens at various stages of development showed that during the first fortnight the marrow is infiltrated with cells which first appear at its circumference; these quickly assume spindle shapes, and lying in bundles divide the marrow into small communicating spaces. By the absorption of the round marrow cells and fat cells these spaces gradually shrink. At the end of this period the bone first appears, and with it are seen hyaline cartilage and osteoid tissue, and Bruns thinks the bone is formed partly directly from osteoid tissue and partly by the ossification of cartilage. The piece of bone that is ultimately formed has a compact outer layer, is cancellous within, and possesses all the characters of normal bone. But appearing in the cancelli in increasing numbers, as time passes on, are seen often very large giant cells, as if the process of bone absorption quickly followed bone formation, and might ultimately destroy the bone. It was found that the result was the same, whether young red or mature yellow marrow was transplanted, and also that if spongy bone tissue was used in the experiment scarcely a trace of bone formation was found, while after two or three weeks the trabeculæ were thickly set with giant cells, and underwent absorption. These experiments show that bone marrow, when transplanted in uninjured continuous pieces into the same animal, not only has the power of forming cartilage and bone, but that, when not quickly destroyed by suppuration or absorbed, it does not form any other tissue. They so far set this question at rest. But the fact, that to succeed, the two parts of the experiment must be performed in the same animal, is of extreme interest, and seems difficult to explain.—*Lancet*, Dec. 10, 1881

Peptonuria.

The readiness with which the presence of peptone in the urine can be detected has led to further interesting observations regarding the production and fate of this substance. The latter has been further investigated by Hofmeister, to whom much of our knowledge on the subject is due. A solution of .3 or .6 gramme was injected into the blood of rabbits; about four-fifths appeared in the urine, but less if the peptone was injected under the skin. If larger quantities are given the effect is to cause a considerable fall in the blood pressure, which interferes with the excretion of the urine; but if the animal were killed, from 4 to 14 per cent. of the ingested quantity was found in the kidneys, while the blood contained only a trace. These large quantities (from one to nine grammes) had a considerable narcotic action. The practical question underlying these researches is the difference in the destination of the peptone absorbed from the alimentary canal and in that absorbed from the skin. Hofmeister believes that the lymph cells with which, during digestion, the adenoid tissue of the intestinal mucous membrane is filled, unite with the peptone and convey it into the blood, so that it passes through the circulation without being excreted by the kidneys. In harmony with this view is the fact which he has ascertained that during digestion a considerable quantity of peptone is accumulated in the wall of the bowel. According to this theory the colourless blood-corpuscles play a similar part in the supply of albuminous substances to the organism to that of the red blood-corpuscles in the supply of oxygen. It has been ascertained by Jaksch that peptone is frequently present in the urine in acute rheumatism. In twelve cases it was found during the course and subsidence of the joint affection. The more numerous the joints inflamed, the larger was the amount of peptone in the blood, and it was also increased in proportion to the rapidity with which the joint effusion was absorbed, either spontaneously or by the aid of salicylic acid. When the effusion had disappeared the peptoneuria also ceased, but returned if a new effusion occurred, as soon as this began to subside.

This fact seems to be analogous to those observed by Hofmeister and Maixner on the occurrence of peptonuria during the absorption of purulent effusions, pneumonic infiltrations, and the like. It is probable that peptone is contained in the corpuscular elements in joint effusions, and that when these corpuscles pass into the blood rapidly and are destroyed, the peptone is liberated and appears in the urine. The same observer has recorded another very remarkable case of peptonuria. A female, aged twenty-seven years, had suffered all her life from a dermoid cyst of the ovary. The cyst had recently undergone a remarkable increase in size, apparently, from the resonance which was developed, in consequence of decomposition attended by the formation of gas. This was accompanied with grave illness and obstinate constipation. The tumour rather suddenly shrank, and the urine, which before had contained only a trace of albumen and no peptone, immediately became loaded with peptone, and continued so until the death of the patient a fortnight later. The section showed a bilocular dermoid cyst, adherent in many places to the intestines, and containing a quantity of gas, with fetid pulpy masses. In the latter were hair, epithelium, and plates of cholesterin. Similar masses were found in the abdominal cavity. The peptonuria was in this case apparently due to the bursting of the tumour, in consequence of which peptone was absorbed from the decomposing purulent masses in the abdominal cavity. The rupture became occluded, and the tumour again enlarged.—*Lancet*, Dec. 10, 1881.

Physiology of Urinary Secretion.

The theory of Ludwig as to the relation between the blood pressure and the activity of urinary secretion received decided confirmatory proof in the observation of Grützner, who found that irritation of the medulla, by which a great increase in the general blood pressure is produced, was without effect in increasing the secretion of the kidney because the renal vessels also were in a state of marked contraction; and that when the nerves of one kidney were divided and the medulla then irritated, secretion was increased in the kidney with divided nerves, and diminished in the gland in which the nerves were intact. The question was, however, again obscured by the statement of Grützner, that digitalis or strychnia injected into the blood suspended the secretion. This point has, however, recently been cleared up by Dr. GUSTAVE GARTNER (*Medizinische Jahrbücher*, Heft ii. 1881) who found that strychnia injections worked precisely like stimulation of the medulla, and that when the renal nerves, or one splanchnic, were divided, renal secretion was augmented, and that when strychnia was so administered as to produce a reduced pressure, the activity of secretion was diminished. It seems, therefore, Ludwig's views are still more firmly established.

Absorption from the Stomach.

The phenomena of absorption from the stomach have been studied experimentally by Tappeiner by ligaturing the pylorus of cats and dogs, and injecting into the stomach, by means of an œsophageal tube, certain quantities of definite solutions. Of grape sugar and sulphate of soda scarcely any was absorbed at the end of three hours. Even of peptone only one-tenth was absorbed. Strychnine remained unchanged in the stomach, whether the pylorus was tied or the vagi divided. If, instead of dissolving the strychnia in water, a weak alcoholic solution was injected, the result was very different. A solution of four centigrammes of strychnia in five cubic centimetres of ninety per cent. alcohol and fifteen cubic centimetres of water, injected into the stomach of a cat, caused death in ten minutes, and a similar result was obtained with a dog, the pylorus in each case being tied. In order to ascertain whether the ligature around the coats of the stomach influenced the absorption, the pylorus was occluded by introducing into it, through a gastric fistula, an India-rubber bag, which was then inflated. The analytical estimation of the absorption under these circumstances was attended with some difficulty on account of the tendency to vomit, but observations with toxic substances showed that absorption was rapid. A dose of chloral hydrate produced sleep in ten minutes, although when the pylorus was ligatured it had little or no effect.—*Lancet*, Dec. 24, 1881.

The Production of the Heart Sounds.

S. TALMA describes, in the *Archiv f. d. gesammte Physiologie*, xxiii. p. 275, an apparatus designed to illustrate the mode of production of the heart-sound. It consists of a tube with rigid walls which terminates inferiorly in a fragment of the pulmonary artery with its valves, and communicates with a bladder which can be compressed with more or less force, and thereby set in more or less rapid motion the column of liquid which fills the tube. With this apparatus he found that the sound produced varied with the height of the column of liquid, and thinks, therefore, that the cardiac sounds are dependent on the oscillations of the column of blood, and not on the oscillations of the valves.—*Revue des Sciences Médicales*, Oct. 1881.

MATERIA MEDICA AND THERAPEUTICS.

Resorcine.

Dr. **Callais**, in his recent work on resorcine (*De la Résorcine et de son Emploi en Thérapeutique*), states that resorcine is a product obtained from benzine. Chemically it is closely allied to carbolic acid, and this suggested to Dr. Callais that they might have similar properties. The same idea occurred to Dr. Andeer. The results obtained independently by the two observers are almost identical. Resorcine was discovered in 1860 by Barth and Hlassivetz, and its properties have since been investigated by Kœrner, Oppenheim, G. Vogt, Brieger, Saltmann, Lichtheim, and O. Kahler. Its toxic power is less than that of carbolic acid. In the lower animals, a dose from 30 to 60 centigrammes per kilogramme produces trembling, clonic convulsions, and acceleration of respiration and circulation, all of which disappear in an hour. Sensibility and consciousness remain intact. Above 60 centigrammes per kilogramme intense vertigo and loss of consciousness ensue, sensibility is impaired, clonic convulsions are violent and frequent, and are localized chiefly in the anterior portion of the body; the pupils are dilated, and the pulse and respiration are accelerated. These symptoms last for one or two hours. With doses of from 90 centigrammes to a gramme per kilogramme death ensues in half an hour. *Post-mortem* rigidity ensues in a quarter of an hour. The author points out that resorcine is a powerful excitant of the nervous system. It exerts no influence on the blood. Resorcine may be used externally or internally in all diseases due to germs, or which favour their development. It has many advantages over carbolic acid; as, for example, its great solubility, its freedom from smell, and its non-irritating properties. A hope is expressed that it may to some extent replace carbolic acid in antiseptic surgery. [Resorcine may be a very useful drug, but the largest doses sometimes recommended should not begin without a certain amount of caution.—*Rep.*]—*Lond. Med. Rec.*, Jan. 15, 1882.

Podophyllin and Podophyllotoxin in Children's Diseases.

Dr. **Braun** (*Arch. f. Kinderheilkunde*, II. 6 and 7) says that podophyllin in adults acts as a purgative in doses of a grain and a quarter or less after several hours. It causes increase of the peristaltic movement, and also of the intestinal secretion. The proof that it increases the peristaltic action is that small doses cause desire to go to stool only; that often before a motion is passed the increased peristaltic movement may be perceived both subjectively and objectively, and the first motions are often firm. It has been used in chronic constipation and in liver diseases. In children of thirteen years, in doses of one-sixth to one-half a grain, it causes one to three loose motions, frequently preceded by firm motions after four to twenty-one hours, and in the next two or three days the motions are generally soft or loose. The general dose for children under a year is one-thirteenth to one-sixth of a grain; for children of one to four years one-sixth, and for older children one-third. The dose, however, depends less upon the age of the child than on the duration of the constipation. These doses cause no disturbance. A single dose is often sufficient to produce soft motions for a considerable time. If not, the dose may be given at bedtime for several nights together. Podophyllotoxin is prepared from the chloroform extract of the root. It is more certain than podophyllin. The doses are—for children under one year, about one-sixtieth to one-thirtieth of a grain; up to four years one-thirtieth to one-fifteenth, and above that one-tenth to one-eighth of a grain. It is most conveniently given in solution; three-fourths of a grain of podophyllotoxin are dissolved in about a hundred drops of rectified spirit. Of this solution two to ten drops are given in a teaspoonful of syrup.—*Practitioner*, Jan. 1882.

Physiological Action of the Asclepias Curassavica.

We read in a recent number of the *Uniao Medico*, of Rio Janeiro, that Dr. Guimaraes has made a series of experimental investigations on the physiological action of the *Asclepias curassavica*—a common plant in Brazil, and known to European botanists under that name, and also in England under the name of *bastard ipecacuan*. Dr. Guimaraes made twenty-five experiments on various animals, such as dogs, rats, guinea-pigs, etc., and he obtained some well-marked results, among which were the following: The active principle is a cardiac poison, resembling digitalis in its action; and, like almost all such poisons, the asclepias affects all the striated muscles, and causes them to lose their contractility. It does not exercise any injurious action on the nervous centres presiding over the life of relation, nor on the sensitive or motor nerves. An alcoholic solution of the roots, injected into the veins, immediately causes a great constriction of the small vessels, resulting in a considerable increase of blood-tension in the large ones, and a more or less rapid reduction of the normal temperature. It is an excitant of the vaso-motor centres. Besides these primary effects, the asclepias produces others which are secondary, among the most notable of which are disturbances of respiration, from a state of slight dyspnœa to great orthopnœa; and disorder of the digestive system, marked principally by vomiting and diarrhœa. The solution obtained by maceration from the stems and the roots acts on the heart and the vessels, but with unequal intensity—that from the stalks exercising a more marked and rapid action on the heart than the solution from the roots; but the reverse takes place when the action is exerted on the vaso-motor centres. —*Medical Times and Gazette*, Dec. 3, 1881.

Inhalation of Medicated Vapours in Diseases of the Respiratory Apparatus.

After an attentive and minute study of this important question in therapeutics Dr. GUILLEMIN gives the following *résumé* of his observations (*Arch. Méd. Belgiques*, Juillet, 1881):—

1st. Certain affections of the respiratory mucous membrane can be advantageously treated with medicated vapours.

2d. In the first period of acute inflammation the pain and cough dependent upon the irritation and dryness of the mucous membrane can be rapidly allayed by warm aromatic vapours.

3d. This action is much increased when a small quantity of one of the volatile sedatives, such as ether, cherry-laurel water, or hemlock, is added to the liquid serving for inhalation.

4th. Frequent inhalations of the terebinthinates, when commenced at the first period of inflammation, can arrest the progress of the disease.

5th. Vapour of iodine exerts an irritant action on the mucous membrane of the air-passages, and increases the secretion and tendency to cough.

This irritant action can be utilized:—

a. To diminish the swelling of the mucous membrane, by causing the inflammation to pass from the first into the second stage. This indication exists above all in cases where the inflammation is seated in the small tubes, and by the swelling interferes with the sufficiency of respiration.

b. To diminish the tenacity of the morbid products of secretion by stimulating an increased formation of mucus.

c. To provoke coughing, and so relieve the air-tubes from accumulated products of secretion.

6th. It is not only by its irritant properties that the vapour of iodine is capable of modifying the respiratory surfaces, it also possesses the power of arresting purulent secretion and of preventing decomposition. Therefore, when the respiratory mucous membrane furnishes a purulent secretion resulting either from the third stage of an acute inflammation or from a chronic inflammation, iodine serves to diminish the quantity of pus formed, and, finally, to completely alter the character of the secretion, restoring it to its normal mucous character.

7th. Although liquid spirit of turpentine is an irritant for surfaces with which it comes in contact, inhalation of its vapour is readily supported by the respiratory membranes, causing only a moderate irritation, and rarely producing spasms of coughing.

8th. This vapour is of value in diminishing the quantity of secretion and augmenting its consistence.

9th. It can completely arrest the formation of pus, when inhaled sufficiently often in suitable cases, and is indicated in all affections of the respiratory mucous membrane accompanied by a profuse formation of a muco-purulent secretion. It should, on the other hand, be avoided when there is difficulty of expectoration from too great tenacity of the secretion.

10th. In cases where the secretions are at the same time very abundant, and very tenacious, alternate inhalations of iodine and turpentine vapour, commencing with the former, serve to rapidly diminish the quantity of the secretion without increasing its tenacity.

11th. Inhalations of turpentine are indicated in hæmoptysis, especially when of moderate intensity.—*Journ. de Méd. de Paris*, Dec. 24th, 1882.

Naphthalin as a New Antiseptic.

Dr. Fischer, Privat-docent, of Strasburg, strongly recommends (*Berliner Klin. Woch.*, November 28) naphthalin ($C_{10}H_8$) as a most energetic and cheap antiseptic and "antibacteriticum." Urine exposed to a local naphthalin atmosphere will remain clear for a week, no minute organisms developing in it; while a fluid, on the surface of which fungus formations have occurred, ceases to produce these in a similar atmosphere. Offensive wounds and ulcers, on powdered naphthalin being sprinkled over them, in a very short time cease manifesting any bad odour. This produces no pain in the wound, is not absorbed by it, favours granulation, and does not excite eczema of the surrounding skin. Deep wounds, abscesses, etc., may be filled with it, just as is the case with iodoform, without any ill effect being produced. The naphthalin is insoluble in water and by the secretions at the surface of wounds; but it is easily soluble in ether (one part to four), and this mixed with alcohol forms a suitable means of impregnating the materials for dressings, such as gauze, etc. In order to impregnate gauze at the rate of 10 per cent. of naphthalin, 100 parts of naphthalin, 400 of ether, and 1200 of alcohol may be employed. The rapid evaporation of the ether and alcohol allows of gauze which has only been prepared a short time before the visit to be at once applied; and the only objection to applying it while still wet is the unpleasantness of the cold produced by the evaporation. By means of the above mixture, from thirty to forty metres of gauze may be impregnated at a cost of 1s. 9d., the cost of naphthalin being 1s. 3d. per kilogramme, contrasting with the prices of some recently recommended antiseptics, such as iodoform at 30s. or 40s., salicylic acid at 15s., thymol at 50s., resorcin at 50s., chinolin at 60s., etc. The easy miscibility of naphthalin with fatty matters, vaseline, etc., should render it, in the form of ointment, serviceable in diseases produced by vegetable or animal parasites.—*Med. Times and Gazette*, Dec. 17, 1881.

Transfusion of Blood.

M. HAYEM has chosen this subject for his course on Experimental Therapeutics in the *Faculté de Médecine de Paris*, and has reached some interesting and valuable conclusions. His experiments are principally concerned with the comparative value of normal and defibrinated blood, and natural and artificial serum. He finds that in cases where, after an abundant hemorrhage, the animals were collapsed, but not condemned to certain death, recovery can be rapidly and completely produced, not only by the transfusion of defibrinated blood, but by the injection into the bloodvessels of any liquid which will not destroy the blood-corpuscles. When, however, the animals enter upon the stage of general convulsions, and are certainly at the point of death, the nature of the fluid then used is of the greatest importance. With defibrinated blood the animals may revive, but the improvement will be only temporary, and death will occur after a few hours; artificial serum seems to act in the same manner, it can produce transient improvement, but not ward off death. Natural serum, on the other hand, can occasionally produce a permanent recovery; while blood drawn directly from the vessels of another animal produces the most favourable results. In transfusion for chronic anæmia in man defibrinated blood appears to be quite as effective as the non-defibrinated.—*Revue Scientifique*, Jan. 7, 1882.

Laughing Gas as an Anæsthetic during Labour.

In a paper recently published in the *Archiv für Gynäkologie*, DR. STANISLAUS KLIKOWITSCH, of St. Petersburgh, advocates the use of nitrous oxide for the purpose of obtaining anæsthesia during labour. He has employed a mixture of four parts of nitrous oxide and one of oxygen, kept and supplied under a sufficient pressure to make its density the same as that of atmospheric air. The author has a miniature gasometer, in which he stores it; for obstetric purposes he carries it in an India-rubber bag, which he puts under the pillow of the patient. The advantages which he claims for it are the following: 1. Its use is quite free from danger, either to mother or child; and has no unfavourable effect in prolonging labour, contrasting in this respect advantageously with chloroform. 2. It without doubt does away with pain in all the stages of labour. 3. By means of this mixture complete anæsthesia can be obtained without loss of consciousness, and therefore without diminishing the action of the voluntary muscles: the fullest possible power is thus available for the expulsion of the child. 4. Absence of vomiting, and often, if vomiting have begun, relief to this symptom; absence also of any period of excitement, and of the after-consequences of anæsthetics —nausea, headache, dyspepsia, etc. 5. The anæsthesia can be continued throughout the whole period of labour, without any cumulative effect; since during the intervals of pain the effect of the preceding inhalations completely passes off. 6. The presence of the medical man is not indispensably necessary for the administration of this anæsthetic. The chief objections to the use for this purpose of nitrous oxide are its comparative costliness, and that the gas and the necessary apparatus are not so portable as could be desired. We should be inclined ourselves to dissent from the statement which the author puts sixth in his list of advantages.—*Med. Times and Gaz.*, Jan. 7, 1882.

Uses and Dangers of Iodoform.

MIKULICZ (*Wiener Med. Wochenschrift*, 1881, No. 23) gives the results of the use of iodoform in Billroth's wards. He claims that it is in antiseptic qualities equal to carbolic acid, is more easily used, and less apt to cause constitutional disturbance by absorption. Symptoms of poisoning are, however, seen in rare cases, and in the *Deutsche Med. Woch.*, 1881, No. 34, A. Henry describes two fatal cases. (See p. 460 of last volume of this JOURNAL.) The symptoms are of the narcotico-irritant type.

In open wounds the iodoform is sprinkled on the surface and covered with lint and gutta-percha tissue, fixed by a bandage. The results have been very satisfactory; the dressings require changing but seldom, discharge is slight, decomposition never occurs, and there is rapid formation of healthy granulations. In incised wounds healing is even more certain than with carbolic acid, and there is much less fear of absorption causing constitutional disturbance.

Wounds implicating mucous surfaces, as of the mouth or rectum, are usually very difficult to treat antiseptically. In such cases iodoform, applied on gauze compresses, has been found to completely prevent offensive smell, and to cause no discomfort to the patients.

In a case of removal of an abdominal tumour, iodoform was sprinkled into the cavity and the wound closed at once. The patient recovered without a bad symptom.

In septic gangrenous or sloughing wounds the results were especially satisfactory. Sprinkling with iodoform removed all smell in from four to six hours, and the wounds healed rapidly and without discharge, even in some cases where severe constitutional symptoms had already appeared.

In strumous diseases iodoform is said to give such brilliant results as almost to entitle it to the rank of a specific. (See also V. Mosetig-Moorhof in *Wien. Med. Woch.*, 1881, No. 13.) Fungating ulcers, with spreading undermined edges and offensive discharge, healed rapidly and completely under a thick layer of iodoform.

In lupus also its effects are gratifying. Riehl (*Wien. Med. Woch.*, 1881, No. 19) gives the results of twenty cases in Kaposi's clinique. The epidermis, when necessary, having been removed by the application of 5 to 10 per cent solution of caustic potash, the iodoform is laid on in a layer several millimetres thick, and fixed as above described. On removal of the dressings in from three to eight days the disease is found completely removed, redness and swelling gone, and the sore skinned over.

In deep wounds, when the powder would be difficult to apply, Mikulicz recommends pencils composed of one part of iodoform to two of cacao butter, and for injection a 20 per cent. ethereal solution. The smell of the drug can be overcome by adding 1 ♏ bergamot to 10 gr. of the iodoform, or moistening with an ethereal or alcoholic extract of Tonquin bean. Local irritation can be effectually prevented by previously oiling the sound skin near where the iodoform is to be applied.—*Glasgow Med. Journ.*, Jan. 1882.

The value of iodoform as an external application in venereal and syphilitic affection has led Dr. THOMANN of Graz to test its value in subcutaneous injection. He employed a dilution of six parts of iodoform to twenty of glycerin, and also a solution in almond oil. He commenced with doses of .3 gramme, gradually increasing the quantity to .75 gramme. In cases of early constitutional syphilis the symptoms rapidly subsided after ten or twelve injections in various parts of the body. No local suppuration was produced. A little pain was sometimes caused, which soon passed away. Rather more reaction followed the solution in oil, especially if the latter was not freshly prepared. An excretion of iodine by the urine could be demonstrated in the first two days after the injection, but no odour of iodoform could be perceived in the expired air, perspiration, or urine. The general health was not disturbed, and the dose employed had no narcotic action, and no effect on the temperature or pulse. Since iodoform is coming into increased use, it is well that the occasional occurrence of unpleasant symptoms from its employment should be known. Oberländer, some years ago, described a case in which a woman had taken forty-two grammes of iodoform in eighty days, and then had a sudden attack of giddiness, weakness in the legs, and double vision, followed by a period of excitement, interrupted by broken sleep, with headache, sensations of impending death, constant convulsive movements, and irregular respiration. After improvement, the resumption of the iodoform was at once followed by a relapse.

In a recent paper in the *Allegemeine Wiener Med. Zeitschrift* two cases in which an eruption was the apparent consequence of the external use of iodoform have been recorded by Zeissl. An ulcer on the leg of a boy three years of age was dressed with iodoform, the dressing being several times changed in the course of a fortnight. At the end of that time the temperature suddenly rose to 105°, and a diffuse erythematous eruption appeared on the flexor aspect of the upper part of each arm and the inner side of each thigh. The affected areas were bright red in colour, the intermediate parts of the skin being normal. The child was somnolent and vomited some greenish-yellow masses. On the third day after the removal of the iodoform the temperature became normal, and the exanthem gradually faded. During its existence the urine gave a distinct iodine reaction and contained some albumen and renal epithelium. The applications of iodoform being resumed, another precisely similar attack occurred, attended with the same elevation of temperature and albuminuria, disappearing five days after the cessation of the iodoform dressings. Ultimately, however, tolerance of the iodoform was established. In another case iodoform was applied to a fistula connected with carious bone. After a week the patient was attacked with an eruption like urticaria, sharply circumscribed prominent red spots surrounded by reddened skin. Some of the raised spots had a diameter of two centimetres. They were especially abundant on the flexor aspects of the limbs. The urine contained no albumen. The application of iodoform was discontinued, and the eruption subsided in the course of a week. With regard to the occurrence of albumen in the urine in the first case, Zeissl remarks that iodine in toxic doses has before been known to cause albuminuria; and that it is desirable always to watch the urine in cases in which iodoform is applied as a surgical dressing.—*Lancet*, Jan. 7, 1882.

Of the uses of iodoform in the treatment of soft chancres, little or nothing needs to be said. It is generally acknowledged that, except in those rare cases in which considerable pain is produced, or in those rarer ones in which its application appears to excite inflammation, the mere dusting of the powder over the sore is almost sufficient to insure a healthy action. Its employment has certainly considerably reduced the duration of this disease, and has done away with the necessity of such painful applications as fuming nitric acid to the exquisitely tender surface. In the out-patient practice of a hospital the use of iodoform will soon banish that most offensive class of cases, the stinking ulcers of the leg. We have long been in the habit of using an ointment composed of iodoform, eucalyptus oil, and vaseline, which has the advantage of enabling the patients to keep their ulcers aseptic whilst changing the dressing themselves daily. It must be owned, however, that this ointment has occasionally set up a rather severe form of dermatitis, due possibly to the fact that iodoform, when dissolved in an essential oil, is apt to undergo decomposition into products of a very acrid nature. Another excellent method of treating ulcers of the leg is to dust the powdered iodoform over them, and then to apply over the sore a piece of the oiled silk protective, and over this a mass of the iodoformized cotton. A firmly applied bandage securing this combines the advantage of a uniform and continuous elastic pressure with that of asepticity. If an ointment such as that described above be employed, and if the patient be directed to use a 5 per cent. carbolic lotion when changing the dressing, it will be found that many smaller abscesses will also remain quite aseptic, though the dressings be frequently changed between the times at which the patient is seen by the surgeon; but if this is to be attempted, it is advisable to incise freely, and thus dispense with the necessity of the drainage-tube. Very similar is the application of the drug to burns; an extensive stinking burn may be purified by a single application of the powder; we have ourselves employed it in such cases with the greatest possible benefit, and it may be remarked that if it be intended to dress the burn with protective and boracic lint (a most excellent application in such cases), the use of the iodoform gives this great safeguard, that, supposing a spot of putrefaction be left beneath the protective, or putrefaction spread inwards beneath the edge at the part from which the greater part of the discharge escapes, the mischief does not extend itself, but is limited or subdued by the iodoform in its neighbourhood. In this connection it may also be observed that it is extremely useful in cases of otorrhœa, ozena, ulcers of the septum nasi, etc. In the treatment of these diseases it may be applied either alone or in combination with any other powder, the employment of which the particular case may render advisable - bismuth, tannic acid, oxide of zinc, or what not. It is easy to blow the powder up the particular part in question, and we would suggest that by means of a speculum it might be used in a similar way in the treatment of vaginitis, though we do not profess to speak on this subject from experience; it may be suggested, however, that a plug of iodoform cotton, inserted into the vagina, might enable the surgeon to perform a strictly aseptic abdominal section in a case where it was impossible to avoid interfering with the vagina or the uterus.

The iodoform cotton is an introduction from Germany; and consists of absorbent cotton-wool which has been thoroughly impregnated by means (we believe) of soaking it with an ethereal solution of the drug. An absorbent lint has been prepared in the same way. This may be advantageously applied to a variety of wounds and sores; but its efficacy is particularly manifested in wounds about the perineum, say, *e. g.*, a hernia. Thus the operation may be performed with the strictest antiseptic precautions, but instead of putting on a gauze dressing, the parts are enveloped in a mass of the cotton, a wise precaution being to previously smear the surrounding hairs with some iodoform ointment. If the stitches are of catgut the dressing may be left on for a week, at the end of which time the drainage-tube may be removed; the stitches, if they have not become absorbed in their deeper parts, may be either taken away or left, as desired, and the second (which will probably be the final) dressing applied. It cannot fail to be observed that this greatly increases the possible field for the performance of antiseptic operations in the country.

The Germans are using the drug in a most wholesale way—we had almost said reckless, because it seems very doubtful whether its use is advisable in many of the cases for which they now employ it, and still more doubtful whether these very large amounts are any more efficacious than smaller quantities; while it is certain that several cases of death have been reported, some of which probably, and others certainly, were due to its toxic effects. We need not again refer to the character of the symptoms of iodoform poisoning; but we shall have done enough to justify our first proposition when we say that cases are on record where, after scooping out a cavity in a carious bone, as much as 120 grammes were placed in the whole (which, it will be remembered, represents 1800 grains), and even larger quantities have, we believe, been introduced. A good idea of the way in which iodoform is being used will be gained by reading an elaborate article by Mikulicz in *Langenbeck's Archiv*, xxvii. page 196, which describes the state of things at Vienna. It is there stated that it is not only employed in such cases as those we have described, but to operation-wounds which involve any of the cavities of the body, and also to all recent wounds whatever. For the former class of cases, as well as in some others, it has been found useful to make the iodoform into a paste with resin or some other substance; this can be inserted into a sinus or packed into a cavity, such, *e. g.*, as a wound in the mouth. A similar use of the drug was, it will be remembered, made by Mr. Watson Cheyne in his iodoform bougies for gonorrhœa. The advisability of its application to recent wounds we venture very seriously to doubt. Indeed, while fully appreciating the immense utility of the drug, we think it quite possible that enthusiasm in its favour is carrying our German brethren too far. It is not quite clear whether its antiseptic qualities are really equal to its disinfecting power, and we must be careful how we trust too blindly to it in this respect; some experiments by Mikulicz himself are sufficient to raise a doubt on this point. He mixed the powder with samples of various putrescible fluids, and stirred them up daily, and yet he found that, though much delayed and diminished, fermentative changes took place in these fluids unless the proportion of iodoform was, comparatively speaking, large. Again, it has been assumed that iodoform exerts a specific action upon the tissue of lupus or tubercle; this has led to its very free employment to the scraped surfaces of supposed tubercular disease of joints and bones, and to lupous affections of the face, etc. That it is very useful in such cases none can doubt, but that its wholesale employment is to be recommended is very doubtful indeed; and that it exerts this specific action is now not maintained by many who some time ago were very positive upon the point.

More might be added, but we have reached the limit of our space, and, in conclusion, would repeat the word of warning—we are not yet fully aware of the true antiseptic qualities of iodoform, and we do know that it does under certain circumstances produce very serious, and, indeed, actually fatal results. Of its internal administration we can say nothing from personal experience, and, therefore, will not venture upon this part of the subject.—*Med. Times and Gazette*, Jan. 14, 1882.

MEDICINE.

Case of Acute Miliary Tuberculosis exactly simulating Typhoid Fever.

SENATOR details in the *Berl. Klin. Woch.* (June 20, 1881) the case of a male patient, aged 42, a messenger, who had all the appearances of typhoid fever (including rose-coloured spots), but *post-mortem* was found to have been suffering from generalized miliary tuberculosis, the Peyer's patches being unaffected. He had been in the hospital before for severe typhoid fever, from Sept. 25 to Nov. 5, 1877, and was discharged cured; well in the interval. In the first days of Sept. 1880, he was taken with slight shivering, pains over the liver, and dyspnœa, and was several days in bed. Afterwards, he had weakness, loss of appetite, and feeling of fulness in the epigastric region. These symptoms increased ten days before his admission, and the pains over the liver especially so. There was no jaundice, nor fever. His family history was good. He had had no previous illness until the before-mentioned typhoid; and had led a temperate life. On admission, he was a fairly well-formed and well-nourished man, with no appearance of cachexia. The epigastrium was painful on deep pressure, especially towards the right. Neither the spleen nor the liver was enlarged; there was nothing unusual in the circulatory and respiratory systems (no cough nor expectoration); tongue coated white and moist; constipation; the urine not albuminous, cloudy from urates. Pulse 80 to 84. Temp. 100.4° F. Four days after (Oct. 29), he had moderately high fever, with considerable remissions in the morning; the spleen was enlarged. On Oct. 31, there were observed for the first time several quite distinct roseolar spots. Next day, there were more spots; the abdomen was distended; he had bleeding from the nose, and, on Nov. 16, much bleeding from the nose and mouth. On Nov. 17, on the back of the right hand were several painless patches of erythematous redness, of the size of a florin. For the three or four days preceding death, there were cyanosis, and swelling of the left parotid gland; and pus was expressed from the duct. Death occurred on Nov. 22. The fever-curve, swelling of the spleen, and rose-coloured spots led to a diagnosis of typhoid fever. No doubt, he had had typhoid three years before; also the morning remissions of the temperature were extreme, and in the fourth or fifth week the high temperature still continued. At that time, miliary tuberculosis was thought of, and the fundus of the eye was searched for tubercles unsuccessfully. Finally, when suppuration in the parotid occurred shortly before death, all doubts about the case being one of typhoid disappeared. *Post-mortem*, there was not a trace of typhoid fever, nor any evidences of the typhoid three years before. But there were miliary tuberculosis of both lungs (the lung-substance being otherwise normal, except in the upper lobe on each side, where there was an indurated and contracted spot), tuberculosis of the bronchial glands, which were much enlarged and partly caseous, of the spleen, of both kidneys, and of the liver. The head was not allowed to be opened. The second part of the communication is occupied with a discussion of the case, and of the already recorded cases that come nearest to it.—*Lond. Med. Record.* Dec., 1881.

Pathology of Tubercle.

Dr. Sidney Coupland gives the following summary of the present state of knowledge on this subject:—

1. Tuberculosis is an infective disease to which man and the higher animals are liable.

2. It is characterized anatomically by the formation of minute nodules or "granulations," composed of elements like those met with in granulation-tissue, the result of simple reparative inflammation.

3. These nodules, or elementary or primary "tubercles," may occur in an isolated manner, or, by their confluence, may form larger or smaller conglomerate masses.

4. The typical structure of each fully formed primary nodule consists in (*a*) a collection of lymphoid round cells, inclosed in a delicate fibrillar meshwork or stroma; (*b*) in an internal zone, more or less evident, of larger nucleated epithelioid cells; and (*c*) a central multi-nucleated or giant cell.

5. These "tubercles" arise apparently in connection with the lymphatic tissue that pervades the body. No region is exempt from them. They may occur in the substance of organs, in the bones and muscles, in serous membranes, as the pia-arachnoid, pleura, pericardium, and peritoneum; in synovial membranes; in

mucous membranes (arising in the submucous stratum), as in the mouth, pharynx, larynx, trachea, bronchi, intestines, and genito-urinary tract.

6. Being ill supplied with bloodvessels, they can only attain a certain size, and then perish. The central cells degenerate first, because they are the farthest removed from the nutrient blood stream, and mutual pressure due to their increasing growth hampers their vital activity. They become fattily degenerated, soft, opaque, caseous, forming "yellow" tubercles, which, when isolated, are larger and manifestly of older formation than the miliary translucent gray granules. Where such tubercles are confluent, larger and more irregular caseous masses are formed. Caseation may pass into cretification. On the other hand, there is no doubt that occasionally the tubercular nodules take on a fibroid change, passing from the stage of "granulation-tissue" to one resembling "cicatricial tissue."

7. Almost invariably there occurs, in the vicinity of the tubercular formation, some reactive inflammation. This may be protective by ultimately leading to encapsulation by fibrous tissue of the caseated tubercular focus; or, as more frequently happens, it aids in the disintegration of the surrounding tissues, and leads, with the necrosis of the tubercles themselves, to destructive ulceration.

8. Individuals who are prone to the development of tubercle are called "tubercular." The disposition may be inherited. Probably what we recognize as "struma" or "scrofula" is only one form of this: a tendency to tuberculosis of lymphatic glands especially; just as in phthisical subjects we have a tendency to pulmonary tuberculosis.

9. The tubercular manifestation is, in the majority of cases, at first local, *i. e.*, limited to one organ tissue. It may remain so limited throughout life—may not even endanger life—or may lead to death by the local destruction to which it gives rise. On the other hand, it may be more or less widely diffused throughout the body of the same individual. The diffusion may be due sometimes to the simultaneous development of tuberculosis in many parts. More frequently it is due to secondary dissemination, by a process of infection.

10. This dissemination takes place, as in cancer, in two ways, viz., by direct extension, or infection of neighbouring tissues by contiguity; and by general distribution of the tubercular virus through the medium of the blood-system (including lymphatics).

11. The tubercular virus seems to be most potent, or, at any rate, to retain its potency, *i. e.*, its infective property, in the caseous state.

12. Examples of the local extension of tubercle, or of propagation by contiguous infection are seen: (1) in the development of peritoneal tubercle from intestinal;[1] (2) in the spreading of tubercle from one part of an organ (*e. g.*, lung) to another part; (3) in extension from lung to pleura;[1] (4) in bronchial, laryngeal, and intestinal ulceration excited by the passage over their mucous membrane of material expectorated from a phthisical lung; (5) in tuberculosis of bladder and vesiculæ seminales following upon renal or testicular tubercle, etc. The mode of its local extension approximates tubercle to the neoplasmata, viz., by its elements exciting in the tissue they infect changes leading to the formation of cell-masses resembling the primary focus.

13. The generalization of tubercle is shown in the disease known as acute miliary tuberculosis, which is characterized by an eruption of miliary granulations in diverse organs and tissues. Its mode of occurrence may be (as above) compared to the general dissemination of secondary cancer, or, perhaps with equal truth, to the metastatic suppuration of pyemia. With few exceptions, it appears to necessitate a primary tubercular focus to give rise to it. It is believed that the

[1] In these cases, probably by extension along lymphatic channels.

infective virus, whatever it be, enters the blood-stream at this local focus, and is thence widely disseminated, the resulting growths being for the most part miliary, gray, and translucent; life not, as a rule, being prolonged for a sufficient length of time after the occurrence of the generalization to permit of the growths becoming confluent or caseous. As the membranes of the brain are generally involved in this widespread infection, death occurs early.

14. Lastly, tuberculosis is inoculable. In this respect, it resembles pyemia, and differs from the cancers; for there is reason to think that it may be and is communicated from one human being to another, *e. g.*, from husband to wife, and *vice versâ;* and that it can be inoculated in animals from man (artificial tubercle). There is, further, a possibility, based on certain peculiar morphological resemblances of the formations, that bovine tuberculosis is communicable to man.

15. If the foregoing data be true, it follows that tuberculosis is an infective disease, probably due to the presence of a virus, which gives rise to the development of peculiar tissue-formations, capable of localized or general propagation in the body, and characterized by their tendency to early disintegration.

16. Until the nature of the virus is known, it is impossible to formulate data concerning the conditions under which the disease arises in subjects free from inherited taint.—*Brit. Med. Journ.*, February 11, 1882.

Pernicious Anæmia.

In a series of cases of pernicious anæmia Riess has found in the bone marrow an abundance of cell elements of a special character, which have rarely been met with. Besides the usual abundant colourless round cells and the nucleated red blood-corpuscles, there were many large cellular structures containing blood-corpuscles, such as have been hitherto described only by Cohnheim, and by Gardner and Osler. They were roundish or oval cells, with a refracting clear hyaline or slightly granular stroma. Their size varied considerably; the smaller were not more than twice as large as ordinary red blood-corpuscles, while the larger were eight times as large. The coloured elements which were contained in these cells also varied much in size and in number, ranging from one to twelve. When few, they resembled closely the ordinary red corpuscles, but more frequently they were smaller, darker, and more spherical, resembling the so-called microcytes. When very numerous they resembled rather fragments of red corpuscles aggregated in irregular groups. Sometimes these small elements were fused together in irregular masses. The nucleus of the containing cell was often concealed by them; and they sometimes occupied so large a part of the area of the cell that the protoplasm of the latter was reduced to a narrow circumferential zone. The number of these large cells in the bone marrow varied in different cases. Usually they were as numerous as the nucleated red blood-corpuscles, and sometimes exceeded these in number. They were found in five out of seven cases of pernicious anæmia examined. Of the two cases in which they were not found one was not a pure case, being complicated with an affection of the kidneys, and, in both, circumstances prevented a very thorough microscopical examination. These bodies, on account of their supposed rarity, have hitherto been regarded as arising from the destruction of red blood-corpuscles. In favour of this view are the form and colour of the contained corpuscles, which so often resembled fragments of corpuscles. But on this view the frequent appearance of these cells in pernicious anæmia is not easy to harmonize with Neumann's theory, according to which the bone marrow in this disease is the seat of an increased formation of corpuscles. It must be assumed that there is a corresponding increase in the destruction of cells in the lymphoid medulla. In accordance with this the blood-corpuscles in the marrow were found in one case to present only the aspect of microcytes, which is usually regarded as a late stage of the red corpuscle. It appears also that, according to the recent observations of Grohé, similar cells are to be found in the bone marrow in other diseases besides pernicious anæmia.—*Lancet*, Dec. 17, 1881.

Miner's Anœmia.

In a communication to the Académie des Sciences, M. Perroncito has described an anæmia which occurs among the miners of St. Etienne, and which resembles closely the disease observed among the workmen at the St. Gothard tunnel, and found to depend on the anchylostoma duodenale. Examination of the stools of three patients at St. Etienne revealed in each large numbers of the ova of anchylostoma. This observation proves the identity of the two diseases. The same parasitic affection has been met with among the miners of Schemnitz. "Miners' anæmia" is thus brought into the class of preventable maladies, since it may be prevented or cured by the employment of substances which have been found capable of destroying the ova either outside or within the human body. The larvæ do not develop in the intestine, but in the fecal substances after dejection, and penetrate the organisms by the air or water after their development. In no stage can an organism resist a temperature of 50° Centigrade, and the larvæ are quickly killed by concentrated solution of chloride of sodium, in sulphuric or hydrochloric acid, in ethylic alcohol, or in one to five per cent. solutions of carbolic acid, and in one-half per cent. solution of thymic acid, and in ethereal extract of male fern. By any of these means the fecal larvæ can readily be destroyed. The male fern given internally is always effectual, even in a single dose. Thymic acid may also be given by the mouth for the same purpose.—*Lancet*, Jan. 21, 1882.

Cells Containing Red Blood-Corpuscles.

Dr. OSLER, of Montreal, refers to the observations of Riess as to the presence of these elements in the bone marrow in pernicious anæmia. Dr. Osler has noted their occurrence in the lymphoid marrow in this affection; in three cases very abundant, in two in moderate numbers. An examination of the marrow in over seventy-five persons of all ages and dead of various diseases has led him to conclude—1st, that cells containing red blood-corpuscles are normal elements in red marrow; and 2d, that it is impossible to connect their presence with any particular disease. He has found them very numerous in cases of phthisis (2), pneumonia (1), typhoid fever (2), ulcerative endocarditis (1). They were present in the marrow of a fœtus at the sixth month, and in that of the sternum of an old man of seventy-six. He does not remember ever having any difficulty in demonstrating them to students in the ordinary red marrow of the rib. Litten and Orth[1] speak of these cells as occurring in a considerable proportion of the cases which they examined, and they also could not connect their occurrence with any special set of conditions. As in the spleen, they present remarkable variations in number, in some instances being scanty and difficult to find, in others so abundant that each field of the microscope contains several examples. On the structural peculiarities and development of these cells he does not here dwell further than to say that each one may contain from one to ten or twelve red corpuscles, which may have a perfectly natural appearance, or be in every stage of transformation into brown pigment grains. He has notes of the occurrence of these cells in the following localities:—

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[1] Berliner Klin. Wochenschrift, 1877.

1. In the connective tissue cell of the embryo and new-born animal. Here, in all probability, the red corpuscles are in process of development (Schäfer).

2. In red marrow, of which they form a normal constituent, but, like the myeloplaques, occur in very variable numbers.

3. In the spleen pulp, normal element (Kölliker), they are particularly abundant when the organ is rich in pulp, as in the acute swelling of fever.

4. In lymphatic glands, when in a state of congestion and tumefaction; not a constant feature, but sometimes very numerous.

5. In brown induration of the lungs; part, at any rate, of the pigment in this condition results from the ingestion of red corpuscles (which leave the engorged vessels by diapedesis or extravasation) by the cells of the alveolar stroma, in which they gradually undergo transformation into brownish-red grains.

6. In the neighbourhood of extravasated blood the connective tissue cells, fixed and amœboid, are often found to contain red blood-corpuscles, which can be traced in all stages of degeneration into pigment granules.

Artificially, he has seen these cells produced by feeding lively white blood-corpuscles of the newt or frog with human red blood-corpuscles; he has a sketch of a colourless blood-cell of the newt distended with four red corpuscles which it had eaten.—*Lancet*, Feb. 4, 1882.

Prophylactic Inoculation of Rabies.

The medical profession may reasonably watch with the most profound interest the attempts now being made to ascertain whether the remarkable discoveries of Pasteur and others, regarding the prevention of acute specific diseases by vaccination with the modified virus, are in any way applicable to rabies. In spite of the attention which has been devoted to it, the subject of the treatment of this terrible disease remains the darkest chapter in the records of therapeutics, and in no other direction than prophylaxis is there at present to be discerned a glimmer of light. M. Galtier has lately stated that the injection of saliva from a rabid dog into the veins of sheep not only does not communicate the disease in its ordinary form, but appears even to confer immunity, so that the disease cannot be afterwards communicated to the sheep in any other way. The same result was obtained in the case of eight sheep thus treated. The experiments are not yet sufficient to justify any definite conclusion even as regards sheep, and no results have as yet been obtained as regards dogs.

In this connection, however, some experiments by Lussana are of interest. They were made a year ago, and have attracted little notice, but their possible significance has recently been pointed out by M. Gibier. Blood from a patient suffering from hydrophobia was injected into the veins of dogs. The patient was a medical man, practising in the suburbs of Padua, who had been bitten three months previously by a rabid dog. Observing in himself what he believed to be symptoms of the disease, he came one day to the hospital and asked to be admitted, as he wished to spare his family the terrible spectacle of his sufferings. He died a few days later, with characteristic symptoms. Before his death five grammes of blood were obtained by means of leeches, and diluted with twenty grammes of distilled water; another five grammes were obtained from the leech later by means of cupping-glasses, and similarly diluted. These were filtered, and in the filtrate no solid element, corpuscle, or bacteria could be discovered by the microscope. On January 9th the two solutions were injected into the femoral veins of two dogs. They presented no symptoms until February 1st, when they appeared dull and quiet. On February 3d one of them remained in his bed, and the following morning, twenty-four days after the injection, was found dead. A post-mortem examination showed only gastro-intestinal congestion and fragments of straw in the stomach and large intestines, and in the latter also a quantity of black blood. A gramme of saliva was taken from the dead dog and inserted in a wound made in a third dog. This presented no abnormal symptom up to the 6th of July, when it was killed. The second dog, into which the filtered blood had been injected, remained dull and shunned other dogs, but showed no other symptoms until the month of June, when it uttered plaintive cries, both day and night. It continued to eat and drink a little, but had obvious hallucinations, turning its head right and left without motive, and often biting the air, barking roughly, and manifesting pugnacity on the approach of another dog. These symptoms continued for some weeks; it bit its own foot, ear, and lips. On July 6th, in consequence of the closing of the laboratory, the dog was killed. The autopsy showed nothing remarkable. M. Lussana was inclined to regard the case as modified rabies. The conclusion is open to some doubt, but if correct it would appear that the saliva of the first dog was incapable of communicating the disease. The experiments are suggestive only, and those of Galtier are at present scarcely more; but, taken together, they certainly deserve notice.—*Lancet*, Dec. 10, 1881.

Treatment of Epilepsy.

PROF. BALL has been investigating the point as to whether the simultaneous action of several drugs is not more efficacious in the treatment of epilepsy than when administered separately, and his results obtained are sufficiently encouraging to deserve attention. The alkaline bromides, particularly those of ammonium and sodium, with belladonna and oxide of zinc, form the basis of the treatment. He administers these bromides, of each 10 parts in 300 of water, commencing with teaspoonful doses four times a day, and increasing up to eight or ten doses daily, if the treatment is not followed by improvement within a few days. The belladonna and oxide of zinc are given in pill form, 15 grains of each being made up into forty pills, and of these, two are taken daily, one in the morning, one in the evening; four pills can be given daily in rebellious cases without causing any inconvenience. In congestive cases he employs drastic cathartics, bleeding, or leeches on the temples or behind the ears.

By this treatment he claims to have produced immediate good results, often seen on the second day of treatment. The treatment must not be suddenly discontinued, but the doses should be gradually reduced. For many reasons he prefers this double salt to the other bromides; it does not produce the headache or torpor generally following the prolonged use of the bromide of potassium, and even where a cure is not produced, the double bromide always diminishes the frequency and intensity of the attacks even in cases where the bromide of potassium has failed. The eruption following the use of the potassium salt is rarely seen when the double bromides are used.—*Journ. de Méd. de Paris*, Jan. 21, 1882.

Salicylic Acid in Rheumatism.

Regarding the question as to whether salicylic acid is a specific for rheumatism, DR. LATHAM develops the following theory as to the pathology of rheumatism:—

1. A nervous centre exists, which controls the nutrition of the muscular and other tissues, and which has been termed the "inhibitory chemical centre."

2. The action of cold, on some individuals, by lowering the power of this centre, modifies the nutrition of the tissues, and leads to the excessive formation of lactic acid and other products.

3 The presence of lactic acid in abnormal amount in the blood produces functional change in the medulla oblongata and the spinal cord (? posterior columns) when brought into contact with them, and develops the local symptoms of acute rheumatism in a manner similar to the production of the symptoms of locomotor ataxy, with its arthropathies, by organic change.

4. If the portion of the medulla oblongata in the neighbourhood of the origin of the vagus is a point of minimum energy, either hereditary or acquired, then, according to the particular fibres involved, cardiac, pulmonary, or pleuritic complications may be developed during an attack of rheumatism.

5. Salicylic acid combines with the antecedents of lactic acid, and so prevents its formation.

6. If the administration of the remedy be suspended after the symptoms are relieved, and before the "inhibitory chemical centre" has recovered its tone, a relapse will certainly take place.

Such a theory explains the necessity for giving at the commencement, at least, of the treatment, as much of the remedy as the system will bear.—*British Med. Journ.*, Jan. 14, 1882.

Salicylate of Soda in Rheumatism.

From a study of the results following the use of salicylate of soda in acute and subacute rheumatism, Dr. Sydney Coupland concludes:—

1. That in the majority of cases salicylate of soda speedily reduces the pyrexia and articular pain of acute rheumatism.

2. That unless the administration be long continued, relapses both of pyrexia and of joint affection are liable to occur.

3. That such relapses are not *wholly* prevented from arising during the administration of the drug, and that in some cases they are distinctly due to the lack of proper precaution in matters of diet and rest, owing to the freedom from acute symptoms enjoyed by the patient.

4. That the best method of its administration is in regulated doses, gradually diminished both as to amount and frequency.

5. That no definite influence upon the cardiac or other complications can be observed (although in this series the number of cases of pericarditis was smaller than the average), and that, indeed, both pericarditis and endocarditis may develop whilst the patient is under its influence.

6. That the toxic effects described are serious in proportion to the largeness of the dose, and, perhaps, to the state of impurity of the drug, but that a few seem very tolerant of it (*e. g.*, No. 84). Its alleged depressing action on the heart has to be proved by experiment, and may be due to the soda.

7. Salicylate of soda is certainly *anti-pyretic*, and, to a considerable degree, *anti-rheumatic*. That its employment does not appreciably diminish the time necessary to keep the patient at rest more than under other methods of treatment, but that the immense relief given by its use in the abatement of pain and fever—a relief not to be estimated by statistics—renders it by far the most valuable remedy for the disease at present known.—*Lancet*, Jan. 14, 1882.

Pilocarpin in Scarlet Fever and Diphtheria.

Professor Demme, in a long contribution (*Jahrb. für Kinder.*, vol. xvi.), continues the record of his observations on pilocarpin in scarlet fever and diphtheria, commenced in 1877. The conclusions at which he arrives are as follows: 1. The variable results in the observed action of muriate of pilocarpin are due to the presence with it of a second alkaloid, jaborin, resembling, according to Harnack and Meyer, atropia in its physiological action, as the pilocarpin is more like nicotin. 2. When a rapid effect is wanted, it is best administered hypodermically in doses of $\frac{1}{60}$th to $\frac{1}{24}$th of a grain under a year old, and $\frac{1}{2}$th of a grain up to ten years. When given internally, the dose should be two or three times larger, with gum acacia to prevent diarrhœa. These quantities may be increased and repeated if a continuous effect be desired. 3. To prevent the vomiting and collapse which occasionally follow the subcutaneous injection, cognac, wine, strong tea or coffee, or ether, hypodermically, may be previously given. Similar stimulants are recommended when the drug is given by the mouth. The cardiac depression, which may amount to general collapse, with temporary loss of consciousness, and Cheyne-Stokes's respiration, which are liable to follow too large or too frequent doses, require stimulants. 4. Different individuals, and the same individual at different times, vary in their susceptibility to the action of the drug; and a vicarious relation between diaphoretic and sialagogue action is occasionally observed. 5. As a part of the general activity of the secretions, a marked expectorant effect, and in some cases an abundant flow from the nasal, laryngeal, and tracheal mucous membranes, occurs. Another less constant effect at the height or end of the diaphoresis is increased urinary secretion, due to the increased blood-pressure, the rapidity of flow in the glomeruli, and, perhaps, also to an effect of the drug on the renal vaso-motor nerves, or even on the floor of the fourth ventricle. 6. The superficial erythema, perceptible at the beginning of the sweating, is due to irritation of the peripheral vessels. 7. In cases of scarlet fever, where the rash is delayed or incomplete, and where, at the same time, there are severe cerebral symptoms, an energetic diaphoresis by injection of pilocarpin most rapidly removes the scarlatinal poison from the blood, and brings out the eruption, thus relieving the cerebral symptoms. 8. Pilocarpin cannot prevent scarlatinal nephritis, but it is the most effectual remedy against dropsy; and, in cases treated by it, the kidney-affection appears to run a more favourable course. 9. Nor can it prevent an attack of uræmia, occurring from extensive glomerular and interstitial nephritis; but in less severe cases its diaphoretic and diuretic action can avert uræmic attacks threatening life, and can relieve them more quickly than any other remedy hitherto employed. 10. Owing to its expectorant action, it facilitates recovery from catarrhal laryngitis, from infectious and non-infectious croup, from catarrhal pneumonia; and by the relief of symptoms of laryngo- and tracheo-stenosis which immediately threaten life. Similarly, a quicker loosening of the membrane and fibrinous infiltrations of true and also of scarlatinal diphtheria follow the administration of pilocarpin, though they do not appear to exert any action upon the specific contagium of the disease. —*London Medical Record*, December, 1881.

During the past twelve months extensive trial has been made, on the Continent more than in England, of pilocarpine in the treatment of diphtheria. The use of such a depressing agent in a disease in which there is a marked tendency to asthenia may seem hazardous, but the agent has been given for its local influence, to aid, by augmenting the buccal secretions, in the separation and detachment of the false membranes. The method originated with Dr. Guttmann, of Cronstadt in Silesia, who, in October, 1880, published the results obtained by this method in eighty-one cases. Of this number, fifteen were, in his opinion, so severe that they would probably have died under any other method of treatment, and thirty others were of moderate severity. All the cases recovered. The abundant and continued salivation established by the pilocarpine detached the membranes, removed the infiltration of the tissues, and in most of the cases the pharynx recovered its normal aspect in from one to three days, a little longer time being required in a few cases of greater severity, but in only two cases did more than a week elapse before recovery.

Results so startling, in a disease so grave, naturally led to the trial of the method in all countries, and during the past year it has been extensively employed in Germany, Russia, and France. The results of the trials have been published in many instances, and those of the several observers have been collected by M. Picot, in the last number of the Swiss *Revue Médicale*. A comparison of these facts with some recorded elsewhere does not, it must be confessed, afford much support to the alleged value of the method of treatment. The total number of the cases in which it has been tried is 129, and of these no less than 47 have died, showing a mortality of about 36.5 per cent., or more than one in three. At the same time, the impression conveyed by massed statistics is apt to be misleading on such a subject. It is clear that in a considerable number of the fatal cases the treatment was commenced too late for life to be saved by any means. Some of the patients, for instance, were already in a state of collapse, in which the fatal end would be rather hastened by the general, than hindered by the local, action of pilocarpine. In other cases the treatment was commenced after tracheotomy had been performed, and under such circumstances it can hardly be said to have had a fair trial.

The results obtained by different observers varied in some instances so much that they can only be accounted for by assuming a difference in epidemic severity. Lax, for instance, treated ten children: the condition of six was grave, and that of two was desperate, but all the cases recovered, the false membrane coming away freely in the abundant mucus and saliva. On the other hand, Alfoeri tried pilocarpine in six cases, all of which proved fatal. Several of those who have employed the method arrived at the conclusion that it is more serviceable in adults than in children, and in pharyngeal than in primary laryngeal diphtheria. Of the cases treated by Neumeister, for example, all the adults (four in number) recovered rapidly, but one-half of the children died. He concludes that it ought not to be employed in the case of children. Of the cases treated by Dehio, all those (fourteen in number) in which the diphtheria was limited to the pharynx recovered, although several of them were most severe, while of ten cases of primary laryngeal diphtheria one-half died; but it is right to add that the treatment was commenced in most of them too late to afford it a fair chance. Moreover, in the case of a child aged eleven, recorded by Lereboullet, it can hardly be doubted that pilicarpine obviated the necessity for tracheotomy. Attacks of urgent dyspnœa had occurred, and asphyxia appeared imminent. Two injections each of five milligrammes of pilocarpine had been given, and six hours after the second an abundant salivation took place, and a quantity of false membrane was expelled. The child slept calmly afterwards, and, the treatment being continued for a few days, the symptoms rapidly disappeared.

It may reasonably be asked whether an agent so powerful as pilocarpine is not likely to be injurious if it fails to do good? On this point also diverse opinions have been expressed. Guttmann could trace no prejudicial influence in any case in which he tried it; nor could Kuster. But Archambault, who lost every severe case thus treated, observed the sweating to be followed by extreme nervous depression; Alfoeri attributed to it a pulmonary œdema, which proved fatal to one of his patients; Weise lost three cases from collapse soon after commencing the treatment; and Neumister attributed to it extreme feebleness or sudden irregularity of the pulse, which he observed in six cases. These opinions are not reassuring, although the symptoms observed may in some cases have been due to the disease, and not to the remedy.

The drug has been administered by the mouth, skin, and rectum. The former method was the one employed by Guttmann, the average dose of pilocarpine being one-fiftieth of a grain for a child and one-twentieth for an adult, given, with a little pepsine, in water acidulated with hydrochloric acid, and every dose was followed by a small quantity of Hungarian wine. He urges most strongly the importance of regular administration, the interruption of the treatment by sleep being always succeeded by an increase in the local symptoms. He attributes to the wine the prevention of any injurious effects from the depressing influence of the pilocarpine. Some of those who have employed this agent have not followed Guttmann's method rigorously, the doses given by Archambault, for instance, having been considerably larger. By some, hypodermic injections have been employed, and with success; while Lepidi-Chioti produced salivation in ten or fifteen minutes by enemata containing half a grain of pilocarpine.

The conclusion from this survey of the facts is certainly disappointing to the expectations raised by Guttmann's original results, which become the more remarkable, and even mysterious. But the facts at present ascertained are insufficient to decide the influence of pilocarpine in diphtheria, and further observations are necessary in cases in which the agent is employed sufficiently early to afford it a fair scope.—*Lancet*, Dec. 3, 1881.

Risks of Intra-Pleural Injections.

A few years ago we heard far more frequently of fatal accidents occurring during the operation of washing out an empyema than we have of late; but we are reminded of these risks in a note from Prof. Billroth's clinic in the *Allegemeine Wiener Med. Zeitung* for December 20th. The writer says that Professor Billroth has become convinced of the inutility of injections for the purpose of washing out the empyemic cavity, except in the case of blood-clots and decomposing secretion; and in the latter case it suffices to perform a single but thorough injection. Thus in one case of a shot-wound in the left thorax, leading to putrid empyema, Professor Billroth made a counter-opening, and for four days allowed thymol to flow through. In ordinary empyema the chances are favourable when the operation is done at the right time, for the longer pus remains in the thorax the longer the lung keeps atelectatic, and thus does not approach the wall of the thorax. A rib is resected, a drainage-tube introduced, and pus allowed free escape—a method of treatment much like that practised by Hippocrates, who bored through the rib and introduced a short smooth metal tube into the opening. To diminish pus formation a rod of iodoform can be placed in the pus cavity. Injections of cold disinfecting fluids often lead to ill consequences. Professor Billroth relates one—a female, twenty years old, with empyema, who was treated by means of injections. One day, when a cure was nearly accomplished, she became unconscious during the injection, and could not be restored. Dr. Wölfler also had an older patient who became unconscious during the injection, but who recovered. Billroth explains these remarkable phenomena, that a shock is received by the organism, excited through the peripheral nerves by means of cold water, and under ever so slight conditions, it may be the cause of death; just as a mere blow on the testicle or stomach region can be fatal. Therefore it is important to employ injections, when they appear necessary, of warm fluid.—*Lancet*, January 7, 1882.

Operative Interference in Pulmonary Affections.

Dr. EDWARD BULL, of Christiania, has been carrying on the surgical line of treatment of pulmonary cavities indicated by Pepper, Mosler, Fenger, and Hollister, and he believes that when a sufficient supply of material is collected to show in what class of cases operative interference is indicated, a new field of successful surgical operations in internal diseases will be opened. He contributes reports of two cases treated in the Christiania Hospital in support of his views. The first case was one of circumscribed pulmonary gangrene in a female 23 years old, with a well-defined superficial gangrenous cavity in the upper lobe of the left lung. The general condition of the patient being very poor, incision was the only treatment which appeared to give any prospects of cure; the cavity was accordingly opened from without and two or three spoonfuls of fetid pus escaped; it was then washed out with a weak solution of carbolic acid and drainage established. At the end of three days expectoration had become scanty and without fetor, the local and general conditions rapidly improved, and the patient was discharged cured about six weeks after her admission into the hospital. The second case was that of a single woman aged 54, of feeble constitution, with a pulmonary abscess resulting from a pleuro-pneumonia in the upper lobe of the left lung, in whom death resulted by suffocation from the sudden rupture of the abscess. Dr. Bull thinks that in this case operative interference would have offered a reasonable prospect of cure with no worse result than possibly a permanent pulmonary fistula, the difficulty of diagnosis and of deciding to undertake a novel operation having delayed active interference until it was too late.

Dr. Bull believes that limited gangrenous cavities and pulmonary abscesses are perfectly curable by incision if the other general and local conditions are favourable. As regards the opening phthisical or bronchiestatic cavities he does not speak in such decided terms, although isolated superficial cavities may be opened with no worse result than a permanent fistula. He does not believe that vigorous antiseptic precautions are necessary during the operation.—*Nordiskt Medicinskt Arkiv*, Band xiii. Nov. 15, 1881.

Segmental Cardiac Disturbance.

An interesting question in cardiac pathology is the occurrence of functional disturbance limited to one of the chambers of the heart. In order to ascertain what evidence experiment can supply regarding the truth of certain opinions on this subject, held by Professor Botkin, of St. Petersburg, one of his assistants, Dr. LUKJANOW, has carried out a series of investigations in the laboratories of Botkin and of Goltz. The experiments were made on rabbits and dogs. The functional connection which normally unites all parts of the heart was interrupted by closure of one of the coronary arteries, by arrest of respiration, and by other measures. He has thus obtained very distinct evidence of the possibility of such isolated functional disturbance, which seems to prove that, just as functional disturbance from organic or neurotic causes may affect the right or the left side of the heart, so it may affect the upper or the lower half. Moreover, as some disturbing influences affect one-half of the heart, vertical or transverse, so others may affect the action of certain parts only, one auricle or one ventricle. The closure of one coronary artery is found to influence, first, the ventricle on the same side, then the other ventricle, and lastly the auricles. The disturbance consists in an alteration in the number and character of the cardiac contractions. The only difference observable between the effects of simple closure and of ligature of the arteries is that the latter acts more rapidly. The alterations in the number and in the character of the contractions do not always correspond. Asynchronism is produced in the auricles much more readily than in the ventricles. A difference between the number of the contractions in the auricles and ventricles is easily produced, and almost as easily a difference between the two auricles. The cessation of the regular action of the cardiac muscle may be followed by an irregular oscillatory contraction of its individual fibres, and between these two conditions an interesting intermediate form may be observed; distinct peristaltic waves course through the heart at regular intervals. In rare cases they may be observed to have a different direction in the different segments of the heart, and the direction may change. Thus the cardiac muscle may contract in peristalsis and in antiperistalsis. At the period after occlusion of the coronary arteries at which regular contractions still occur in the ventricles, although the ventricles are the seat only of the peristaltic waves, irritation of the peripheral portion of the vagus still influences the auricles, but has no effect on the ventricles. The secondary contractions in the legs of a frog galvanoscope, which are produced by the auricles of the heart in the normal condition, are distinctly weakened after closure of the coronary arteries. At a certain period after closure of the vessels the left auricle presents intense mechanical distension. The closure of the left coronary artery in atropinized animals shows that the inhibitory centres do not play any considerable part in the production of the phenomena. General asphyxia, of sudden onset, influences especially sometimes one, sometimes the other half of the heart, and the resulting disturbance differs somewhat from that observed after closure of the coronary arteries. The effect on the secondary contraction in the frog's legs is much less rapidly produced, and there is less tendency to the occurrence of peristaltic waves of contraction. It seems probable that the effects of arterial occlusion are to be referred to two chief influences; the effect of the sudden ischæmia on the muscular fibres and nervous ganglia, and the persistence in the tissue of the products of such action as may occur.—*Lancet*, December 24, 1881.

Perforation of Gastric Ulcer into the Left Ventricle.

In the *Wiener Med. Blätter*, No. 52, OSER published the account of a case of a woman aged 71 years, in which the autopsy revealed a round ulcer of the stomach which had opened into the left ventricle. The communication was established between the two organs by a long narrow canal; no air was found in the heart or arteries. The perforation had occurred three days before the death of the woman, and was indicated by the vomiting of bright arterial blood and tarry stools. Brenner (*Wiener Med. Woch.* 47, 1881) has just published an analogous case. A woman, aged 55 years, had been subject for years to attacks of cardiac pain, occasionally accompanied by vomiting. Six months before death she had an attack of pleurisy with violent pains radiating to the epigastrium. A few days before death she vomited blood, had severe cardiac distress, and passed black, tarry stools.

The autopsy revealed a circular perforation on the lesser curvature of the stomach, which communicated with an opening in the wall of the left ventricle. As far as we know, these are the only two such cases on record.—*Gazette Médicale de Paris*, Dec. 3, 1881.

Cardiac Hypertrophy as a Renal Disease.

The problem of the subordination of cardiac hypertrophy to renal disease, when the two coexist, to which so much discussion has been lately devoted, has engaged the attention of M. STRAUS of Paris, who has published in the *Gazette Médicale* a preliminary account of his experimental results. The difficulties of the problem of the relation of the heart to the kidney lesion depend upon the complexity of the morbid conditions present in the system. These are much simplified in an experimental inquiry, although the results thus obtained have not always been very decisive. It is difficult to preserve for long the life of animals after a lesion of both kidneys, and Straus has therefore contented himself with causing atrophy of one kidney by ligature of the ureter. Previous experiments of the same kind have yielded contradictory results. Simon, Rosenstein, and Gadden observed no cardiac consequence; Beckmann, Grawitz and Israel, and Lewinsky found a resulting hypertrophy of the left ventricle. The experiments of Straus were made on twenty guinea-pigs, which were killed from four to six months after the operation. A pure hypertrophy of the left ventricle was found to be the invariable result. The average weight of the heart, for instance, in three cases was 2.76 grammes, while that of three healthy animals was only 2.25 grammes, and this although the average weight of the guinea-pigs operated upon was two hundred grammes less than that of those selected for comparison. The hypertrophy was uncomplicated by any degeneration of the muscular substance of the heart, and was apparently the direct result of the atrophy of the kidney, since the arterioles in various parts were examined and found to be healthy.

Grawitz and Israel asserted that, although cardiac hypertrophy might follow a renal lesion in old animals in which the other kidney did not sufficiently overgrow to compensate for the loss, this result was not to be obtained in young animals. This statement is disposed of by the experiments of Straus, since nearly all the guinea-pigs he experimented upon were young. Moreover, he was unable to observe any inverse relation between the degree of hypertrophy in the heart and kidney, such as should obtain if the conclusions of Grawitz and Israel were correct. In one of the cases in which the increase in weight of the heart was greatest, the remaining kidney had increased to at least double the normal weight. An objection which is often urged against the dependence of cardiac hypertrophy on renal disease is the absence of such hypertrophy in cases in which the kidney suffers in consequence of an affection of the urinary passages. But Straus relates, to show that hypertrophy may be found in these forms, two cases of women dying from uterine cancer which had compressed the ureters, and had caused dilatation of the pelves of the kidneys and very marked renal lesions. In each there was considerable hypertrophy of the heart without any valvular lesion. In a discussion on this paper at the Société de Biologie an interesting and apposite case was related by Quinquaud. A man of twenty-eight years of age was shot in the left lumbar region, and recovered after an illness attended with hæmaturia. At this time there was no hypertrophy of the heart, but distinct evidence of this was discovered two years afterwards. He died with symptoms of uræmia four years later. The left kidney contained an old abscess, the right was hypertrophied, and the heart was increased in weight to eighteen ounces in consequence of hypertrophy of the left ventricle. All the liquids of the body were found to contain a large excess of urea.—*Lancet*, Dec. 10, 1881.

Embolism of the Aorta with Experiments on the Production of Cardiac Murmurs.

MM. Barie and Du Castel (*Archiv. Gén. de Méd.*, Jan. 1881) narrate the case of a laundress, aged 30, who was confined, for the third time, four months and a half before admission to hospital, when she was in a febrile condition. A few days after she had a severe rigor, with great pain in the loins, and tingling in the limbs, followed by paraplegia. There was total absence of pulsation in both limbs. Not a trace of murmur was to be heard over the heart; but in spite of this the diagnosis was ulcerative endocarditis of puerperal origin, with embolism of the abdominal aorta, and consecutive paraplegia. A bed-sore over the sacrum and incontinence of urine and feces followed, the urine being bloody and albuminous. Up to the time of death consciousness was retained, and the cardiac sounds maintained their purity. At the necropsy, ulcerative endocarditis of the left side was found, along with a large clot attached to the wall of the auricle, and prolonged into the ventricle, where it was adherent to the chordæ tendineæ. The auriculo-ventricular valve was perforated; the aortic competent, but inflamed. At the bifurcation of the aorta there was a large fibrinous clot, not adherent to the vessel. The spinal meninges and the cord itself were much congested in the lumbar region, the kidneys were studded with infarcts, the spleen congested, and its main artery obliterated; there were no signs of embolism in the brain, the lungs, or the liver. The authors cite several cases of aortic embolism and thrombosis, and point out that the former is more frequently met with than the latter. To explain why there was no murmur in their case, when the clot would be expected to produce one, MM. Barie and Du Castel, under the supervision of M. Potain, arranged a series of tubes of the same calibre, through which currents of water (at the same pressure) flowed. In these tubes were placed diaphragms of the same metal, perforated by apertures of different shape and position. They found that the intensity of the murmur was the same in all, whatever the form and situation of the orifice might be. Then to make out whether the material of which the obstacles were composed had any influence, they removed the diaphragms, and substituted foreign bodies of different nature and resistance. The murmur was loud and distinct when the obstacle was hard and resistant; but when it was soft and velvety the murmur almost disappeared. They therefore conclude: 1. That the form of the orifice has no influence over the production of the murmur; 2. That the consistence of the walls of the orifice exerts a notable influence upon the intensity of the murmur.—*London Med. Record*, Dec. 1881.

Œsophageal Ulcer from Digestion.

Professor QUINCKE, of Kiel, published some time since observations to show that ulcers may occur in the œsophagus from the action of the gastric juice. Three cases are now (*Deut. Archiv für Klin. Med.*) published in support of this. 1. The first case was that of a patient suffering from cancer of both ovaries. The ulcer was in the lower part of the œsophagus; and in this, as in the other cases, the absence of cancer at the spot was proved by microscopic examination, as was also the possibility of corrosion *ante mortem* or digestion *post mortem*. 2. The second was that of a patient affected with ovarian cyst, in whom an œsophageal ulcer in the lower half had perforated into the right pleural cavity. 3. The third case was that of a man, 50 years of age, cachectic, and to all appearance suffering from cancer. The *post-mortem* examination, however, showed the cause to be marked narrowing of the œsophageal opening of the stomach by a cicatricial stricture, evidently the remains of a previous ulcer involving the neighbouring mucous membrane, and giving rise to muscular hypertrophy of the œsophagus and chronic swelling of its mucous membrane.—*London Med. Record*, December 15, 1881.

Encysted Dropsy of the Peritoneum.

At the meeting of the Harveian Society of London, on Jan. 5, Mr. KNOWSLEY THORNTON read a paper on this subject. The disease is very rare, but he had met with two cases in his hospital practice in the last three months, and this showed that we must be prepared to diagnose it from other abdominal enlargements. Correct diagnosis being all important in these cases for successful treatment, he alluded to the small amount of information on the subject to be found in either the general or special text-books. He quoted at some length a case in Mr. Spencer Wells's work on Diseases of the Ovaries, which very closely resembled one of his own, and alluded to the opinions of Drs. West and Peaslee. The statements of the latter he regarded as misleading, the errors arising, in his opinion, from an attempt to generalize from imperfect data. He pointed out that it is important to distinguish this disease from the much commoner condition in which partial collections of fluid occur in the peritoneum around malignant growths. His own cases were then fully recorded.

Case 1 was that of a woman of forty-five, supposed to have an ovarian tumour, which was also supposed to have ruptured into the peritoneum while she was under the author's observation. Suppression of urine led to tapping of the peritoneum, which gave temporary relief, but she died with uræmic symptoms without further operation. The post-mortem revealed very advanced granular disease of the kidneys, a large spleen, and an encysted dropsy which had become general by breaking down adhesions. The ovaries were healthy.

Case 2 was that of a young girl in whose abdomen a doubtful collection of fluid existed. It was a very difficult case for diagnosis, but, on the whole, the author leaned to the view that it was a case of flaccid broad ligament cyst. Abdominal section showed that it was an encysted dropsy of the peritoneum. The fluid was removed, the sac carefully sponged out, and the incision closed without drainage. The patient made a good recovery, the intestines gradually re-occupying the place where the fluid had been, and when she was last seen there was no appearance of re-accumulation.

Mr. Thornton urged the importance of the record of rare cases, and pointed out that the knowledge of this disease was still too limited for it to be possible to lay down rules as to diagnosis. He would accept Peaslee's statement that encysted dropsy of the peritoneum is always preceded and caused by peritonitis. The causes of the peritonitis are, however, very various. With regard to treatment, he thought it right to open the abdomen, and sponge out the sac, in any case in which the condition was diagnosed in a patient free from kidney disease; drainage was not necessary. He urged the advantage of incision as compared with tapping, and spoke strongly as to the value of Listerism in abdominal section, emphasizing his faith by his results in ovariotomy at the Samaritan Hospital in 1881. During that year he had had forty-one cases, had not once drained, and had only two deaths, both occurring in young patients, the subjects of malignant tumour.—*Lancet*, Jan. 21, 1882.

Malaria and Diabetes.

At the meeting of the *Académie de Médecine* on November 29th, M. VERNEUIL communicated six observations that he had made within the year, relative to surgical affections in persons affected simultaneously with glycosuria and malaria, and he presented an extended historical review of the authors who had previously noted this association of diseases. He cited in particular the memoir of Dr. Burdel, presented to the *Académie des Sciences* in 1859, of which the following were the conclusions: 1. There exists a true diabetes in malaria. 2. This diabetes is only ephemeral, that is to say, it appears with the fever, lasts during its stay, and disappears with it. 3. The glycosuria of malarial fever reveals the disturbance which destroys the equilibrium between the cerebro-spinal and sympathetic nervous systems. 4. This explanation, given by Claude Bernard, is confirmed by the clinical facts. 5. The more violent the cases, and intense the fever, the greater the quantity of sugar in the urine. 6. When, on the contrary, the attacks become more numerous and less severe, or, in other words, when the malarial cachexia is established, then the amount of sugar excreted becomes less.

In his notes, M. Burdel announced that he found sugar in the urine in considerable quantity in eighty instances among eighty-six cases of malarial fever; in thirty cases where the fever had become remittent, the sugar was in less quantity, and that in pregnant or nursing women, the sugar is present in large amounts.

M. Verneuil reports the notes of six cases, which lead him to formulate the following conclusions:—

1. Malaria frequently causes glycosuria.

2. This may occur in two forms: the one cotemporary with the febrile attack, and, like it, transient; the other occurring after and independent of the febrile attack, and, unlike the first, of which it is a consequence, is permanent.

3. Permanent glycosuria is especially apt to occur in malarial subjects of arthritic diathesis.

4. Malarial glycosuria appears to be one of the benign forms of diabetes.

5. Intermittent affections occurring in such subjects may take on certain characters of malaria or diabetes, or of both affections at the same time. Traumatic lesions may irritate or aggravate both diatheses, especially that of telluric origin. —*Gaz. Méd. de Paris*, Dec. 3, 1881.

The above subject caused an interesting discussion, M. COLLIN particularly objecting to M. Verneuil's deductions. In the *Journal de Médecine de Paris*, Dec. 17, 1881, the question is subjected to a critical review, of which the following are the conclusions:—

1. The pathogenic influence of malaria can be admitted in a certain number of cases, even though mere coincidence might also be urged; it is probable, however, that this causative influence is not often exerted.

2. In the cases where diabetes is associated with malaria, it should first be proved that some more efficacious etiological condition is not concurrent with the latter.

3. Although the present state of sciences will not permit the affirmation of the frequent occurrence of diabetes of malarial origin, the facts observed by Prof. Verneuil are of sufficient importance to cause attention to be directed anew to this interesting subject.

The Value of Alveolar Periostitis of the Jaws as a Diagnostic Sign in Diabetes.

At the meeting of the *Académie de Médecine* held on Dec. 27, 1881, M. MAGITOL read a memoir with the above title, of which the following are the conclusions:—

1. Examination of the mouth furnishes a constant diagnostic sign of the presence of diabetes.

2. This consists of a condition of the alveolar border described as alveolar osteo-periostitis.

3. This manifestation of diabetes, which appears at the onset of the disease and lasts during its course, may in certain cases serve as a revelation of the presence of the disease.

4. The alveolar lesion at the commencement of the diabetes is distinguished by a deviation of the teeth; in a further stage of the disease the teeth become loosened and alveolar catarrh is present. And in the most advanced state of diabetes the teeth drop out. If, after these stages, the disease still advances, the

alveola, deprived of the teeth, may become absorbed consecutively or not to a partial gangrene of the gum. This last sign is usually only shortly antecedent to death.—*Journ. de Méd. de Paris*, Dec. 31, 1881.

Albuminuria in Epilepsy.

An exhaustive paper by Dr. KLEUDGEN, in the *Archiv für Psych.*, Band xi., Heft 2, bids fair to set at rest the much vexed question as to whether albuminuria is a common result of an epileptic attack. The author has made many preliminary experiments to ascertain the tests for albumen, which are at once the most delicate and the least liable to any source of fallacy. Observations were made upon fifty-seven confirmed epileptics (36 males and 21 females), aged from 13 to 66 years. In women, the urine was always drawn off by catheter. It was found that the urine passed within four hours of an epileptic attack nearly always contained traces of albumen; in only about one-eighth of the cases was it entirely absent. But, pursuing his observations further, Kleudgen found, on examining the urine of these same patients as long as possible after a fit, that quite as large a proportion of the samples contained small amounts of albumen. Further, on testing the urine of a large number of insane patients of various kinds, but not epileptic, it was found that albumen was present in just abont the same number of cases. Not content with this, Kleudgen next directed his attention to the urine of healthy adults. In eight cases out of thirty-two attendants upon the insane, he found a small quantity of albumen to be present in the urine.

The author's conclusions are these: There are traces of albumen in all urine which presents a certain degree of concentration (an increased specific gravity). Slight increase in the quantity of albumen may occur periodically without a corresponding rise in the specific gravity, and without the existence of renal disease. The urine secreted after an epileptic attack does not present any peculiarity, either in reaction or in specific gravity. It is very rare that an attack of epilepsy determines an augmentation of the quantity of albumen in the urine; when this occurs it is only very slight; moreover, in males it is generally due to the presence of semen in the urine. Renal casts are not found in the urine of epileptics unless kidney-disease be present.

Accepting the above results as true, it is easy to trace the origin of the contradictory statements which have been made upon this matter. Those observers who have only used the ordinary methods of testing for albumen have found none in the urine of those epileptics who were free from renal disease. Others, who have made use of more delicate tests, have found small quantities of albumen almost constantly present; but they have failed to note that this is also the case in the same patients while temporarily free from convulsive attacks, also in insane patients of all kinds, and in a large proportion of healthy adults of both sexes. We may add that a number of the most careful and exact observers have been ranged upon both sides in the controversy which has been so long continued upon this subject.—*London Med. Record*, December 15, 1881.

Hæmoglobinuria Produced by Naphtol.

Dr. ALBERT NEUSER (*Central. f. d. Med. Wiss.* No. 30) has found that when naphtol is given in large doses to dogs and rabbits it produces hæmoglobinuria. One gramme, injected in a concentrated warm solution under the skin of a rabbit of 1000 grammes, produced death, and a gramme and a half killed a dog weighing 4500 grammes. Death was preceded by salivation and restlessness in dogs, and by well-marked convulsions in rabbits. Dogs are killed by a smaller proportionate dose than rabbits, just as they are by pyrogallic acid. This is important, as man resists pyrogallic acid still less than dogs. Twelve grammes of pyrogallic acid given to a man weighing 100 kilogrammes, produced solution of the blood and death. It is therefore probable that the fatal dose of naphtol for a man would be comparatively small, and all the greater care must be employed in its application, as patches of psoriasis appear to increase the absorptive power of the skin. The urine must therefore be carefully watched during the application of naphtol, and when nephritis is present still more precaution must be employed.—*Practitioner*, November, 1881.

Leprosy.

In a paper on Leprosy as it exists in Louisiana, Dr. G. B. UNDERHILL concludes, as regards its etiology—

1. That the disease is clearly of a specific character, generally due to hereditary transmission. That its hereditary character is not similar to that of syphilis, but more allied to those classes of diathetic disease, such as carcinoma, tubercle, and the like.

2. Its propagation by contagion cannot be proved. Its non-contagious character is universally admitted.

3. That climate, soil, and race cannot be regarded as positive elements in its causation.

4. That filth and uncleanness increase the liability to and accelerate the progress of the disease.

5. That absence in the diet of certain principles, such as nitrogen, oxygen, and potassium, may be considered as negative causes of its production.

The following summary of its symptoms is also given:—

1. The precursory symptoms are such as would point to the approach of any serious constitutional malady.

2. That bronze discoloration and a flabby, shrunken condition of the skin is usually the first permanent symptom and generally associated with local anæsthesia on the extremities.

3. That nodulation, the result of leprous tubercular deposit, occurs at a later stage of the disease, progresses slowly, and involves all the tissues and viscera of the body, the lungs and pancreas excepted.

4. That death is the termination of the disease in all cases. It results either from exhaustion, blood-poisoning, asphyxia, diarrhœa, or dysentery. That death from exhaustion or blood-poisoning is common to both sexes in any stage of the disease after nodulation sets in. That death from asphyxia is most common among women, and occurs late in the career of the disease. That death from diarrhœa or dysentery is most common among men, occurring generally at a late date. That the progress of the disease is slow. Mild cases generally continue about twenty years. Severe cases terminate on an average after nine to twelve years.

Dr. Underhill believes that leprosy is an incurable disease from its commencement to its termination; palliative measures and measures tending to limit its propagation can only be adopted.—*New Orleans Medical and Surgical Journal*, January, 1882.

SURGERY.

Transplantation of Bone.

From studies made on this subject, Dr. Mac Ewen concludes that bone-grafts are capable of being transplanted, even in the case of man, of forming adhesions, and developing. Each graft should comprise all the osseous elements, the best process being to divide the fragments with a sharp-cutting instrument into very small pieces before applying them. In order to insure success, antiseptic treatment must be carefully carried out.—*Revue de Chirg.*, Jan. 10, 1882.

Iodoform in Wounds of the Mouth.

The efficacy of the local use of iodoform in tuberculous affections of the joints, and its efficacy in the treatment of wounds where sutures are inapplicable, have recently led Prof. Billroth to test its use in wounds near the natural apertures of the body, particularly since antiseptic dressings to these parts have been found unmanageable. From April to October, 1881, eighteen carcinomata of the tongue were removed in the Vienna clinic. In some of these cases the third or half of the tongue was excised, although in the majority the organ was removed in its entirety. In many of the cases it was found necessary to remove part or all of the floor of the mouth to the hyoid bone. In several cases the submaxillary gland and lymphatics, as well as parts of the soft palate and pharynx, were removed. To render these extensive operations practicable, the inferior maxilla had to be divided, and in a number of cases was partially removed. To prevent excessive hemorrhage and flooding of the field operation, the operations on the tongue were, as a rule, preceded by ligature of the lingual and facial.

In all of the eighteen cases a complete cure was effected. In none of the cases was there any local disturbance, and in only a very few was there any elevation of temperature except during the first few days.

Since the technicalities of the operation had not been altered, these fortunate results must be attributed to the treatment of the wounds with iodoform. The main points of this treatment can be summarized as follows: When, after amputation of the tongue and floor of the mouth, the latter communicates with the external wound through which the lingual artery was ligated, a large drainage tube is passed through this opening into the mouth. If the floor of the mouth was not injured by the operation, Billroth no longer perforates it for drainage purposes. After the operation a piece of iodoform-gauze, six to ten inches in length, and one to two inches in width, folded upon itself, is introduced into the wound, and pressed against the surface operated upon. This small piece of gauze suffices to completely and permanently keep the wound free from septic changes.

The piece of gauze thus introduced after the operation clings to the wounded surface for from five to eight days. It does not come out spontaneously before this length of time has elapsed, and does not interfere with the deglutition of the patient.

The iodoform gauze is prepared as follows: 60 gr. of resin are dissolved in 1200 gr. of alcohol, and 50 gr. of glycerine are added to this solution. Into this are placed six yards of gauze, from which the excess of solution is to be squeezed out. When this gauze is half dried, 50 gr. of powdered iodoform are dusted upon it.

If the results obtained in these cases of Billroth be compared with those achieved in similar cases in former times, it becomes apparent that in the iodoform we have a powerful means of preventing the septic changes that usually carried off patients who had been subjected to capital operations about the mouth.—*Cincinnati Lancet and Clinic*, Jan. 14, 1882, from *Centralb. f. Chir.*, Dec. 3, 1881.

Excision of the Tongue.

WALTER WHITEHEAD, F.R.C.S.E., F.R.S. Edin., reports twenty-eight cases of removal of the tongue through the mouth with only one death as the immediate result of the operation in an old man aged sixty-nine. The difficulties and danger of the operation, according to the author, are few and more imaginary than real. Hemorrhage, the *bête noire* of most surgeons who contemplate removing the tongue, is in reality easily controllable, and frequently trifling. Mr. Whitehead states that he has twice removed the entire tongue without having to secure a single vessel, and more than once had only to twist one lingual artery. The operation is conducted in the following manner:—

1. The mouth is opened to the full extent with Mason's or any other suitable gag, the duty of attending to this important part of the operation being intrusted to one of the two assistants required.

2. The tongue is drawn out of the mouth by a double ligature passed through its substance an inch from the tip. This ligature is given in charge of the second assistant, with instructions to maintain throughout the operation a steady traction outwards and upwards.

3. The operator commences by dividing all the attachments of the tongue to the jaw and to the pillars of the fauces, after the manner suggested by Sir James Paget, with an ordinary pair of straight scissors.

4. The muscles attached to the base of the tongue are then cut across by a series of successive short snips of the scissors until the entire tongue is separated on the plane of the inferior border of the lower jaw, and as far back as the safety of the epiglottis will permit.

5. The lingual or any other arteries requiring torsion are twisted as divided. It is generally found that a moment's pressure with a small piece of sponge, held in sponge forceps, suffices temporarily, if not permanently, to arrest any bleeding; it is, however, regarded as desirable to twist, either immediately or after the tongue is removed, every bleeding vessel.

6. A single loop of silk is passed by a long needle through the remains of the glosso-epiglottidean fold of the mucous membrane, as a means of drawing forwards the floor of the mouth should secondary hemorrhage take place. This ligature may with safety be removed the day after the operation, and, as it is invariably a source of annoyance to the patient, it is always desirable to adopt this rule.

The after-treatment consists in feeding the patient for the first three days absolutely and solely by nutritive enemata, satisfying the thirst by occasionally washing out the mouth with a weak iced solution of permanganate of potash, forbidding any attempt at speaking, and requiring that all the wishes of the patient shall be expressed in writing, or by signs.—*Lancet*, Oct. 22, 1881.

In the *Annals for Anatomy and Surgery*, Dec. 1881, Dr. JOSEPH HOWE records two cases of entire removal of the tongue, and describes "a safety-pin tourniquet" whose use, he thinks, will render the extirpation of the tongue an exceedingly safe and simple operation.

Extirpation of Goitres.

Dr. WÖLFLER contributes to the *Wien. Med. Woch.*, No. 1, 1882, some statistical details of the cases in which Professor Billroth has performed the operation for extirpating goitre. He commences his short paper with the remark that one of the most interesting and profitable of surgical inquiries consists in casting a critical eye over the results, obtained by skilful hands, in surgical operations which but a short time ago were never thought of. Not only does the surgeon call to mind the interesting clinical points in each case, but he impresses on his memory the valuable experience which each case afforded, out of which gradual improvement in the modes of operating is derived. The author on this occasion, as already remarked, keeps strictly to statistics, reserving for a future occasion the detailed history of the cases. Thanks to antiseptic surgery, Professor Billroth has felt himself justified in resuming this operation and of developing it during the past five years. Within this period he has performed 58 operations on 55 patients (in three cases a second operation was necessitated in consequence of recurrence). Of the 55 patients, 48 were cured and 7 died. This gives a mortality of 12.7 per cent. In two of these fatal cases death resulted from causes apart from the operation; in one in consequence of bursting of an aneurism of the aorta; in another from peritonitis. Among the remaining 53 cases, there were 5 of malignant disease of the thyroid. Of these 5 cases 4 recovered from the operation, while the fifth died after tracheotomy had been performed, of asphyxia, dependent on extensive recurrence. All these cases, indeed, might be excluded, as extirpation of the thyroid, on account of malignant growths, differs both in the method of operating and in prognosis from cases of goitre. Thus, 48 patients remain, of which 44 were quite cured. Comparing the results (of the goitre cases proper) with others obtained in the pre-antiseptic period, the following facts are shown: From 1860 to 1876 there was a mortality of 36.1 per cent.; whilst during the years from 1877 to 1881 the mortality was 8.3 per cent. As regards the performance of tracheotomy in these 48 cases, in 5 only was it called for, either before, during, or after the operation. Of these 5, 3 died and 2 recovered. Thus of the 43 cases in which tracheotomy was not necessary only 1 died, which is a percentage of only 2.3 per cent. of non-tracheotomized patients. From this it may be concluded how much more severe those cases are in which at the time of the operation there is tracheal stenosis. Of the 48 cases, 15 were males, 33 were females. Among the latter the operation was undertaken in several instances on "cosmetic" grounds. The oldest patient was sixty-five, the youngest (a girl) only twelve. Age seemed to exert no unfavourable influence. Concerning the mode of operating it may be stated that in 2 cases the gland was shelled out of its capsule, 1 of which was fatal; in 24 cases only one-half of the gland was removed, with 1 fatal case; and in 22 cases the entire gland was removed, with 2 fatal cases. The average duration of the after-treatment in the favourable cases was 21.8 days. The recurrent laryngeal nerve seems to have been interfered with (as shown by laryngoscopic examination) in 11 cases on one side; in 2 cases on both sides; and in 31 not at all. Of these cases of one-sided paralysis of the cords, it must be mentioned that the patients recovered perfectly in the course of time, and that in 3 of the 11 the paralysis existed before the operation. In 1 of the 2 cases of double-sided paralysis of the cords, which died of tetanus three months after the operation, a post-mortem examination failed to show that the paralysis depended on injury of the recurrent laryngeal nerve.—*Med. Times and Gaz.*, Feb. 4, 1882.

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Gastro-Enterostomy.

Under the above title we hear of a new operation from Germany, performed for the first time by Dr. Anton Wölfler, who is Professor Billroth's assistant, and afterwards by that distinguished surgeon himself. The operation (an account of which will be found in the *Centralblatt für Chirurgie* for November 12) appears to have been devised on the spur of the moment, after an exploratory incision had been made into the abdomen of a man who was suffering from cancer of the pylorus, and in whom the operation for removal of the tumour proved to be impossible. It consisted in making an incision into the stomach near the middle of the great curvature, and a similar cut into a coil of small intestine, we presume as near as possible to the commencement of the jejunum, and carefully sewing to one another the margins of the two openings thus formed. The object of the operation is thus twofold—in the first place, to allow the materials swallowed to pass into the intestine; and in the second place, to prevent any obstruction to the escape of the biliary and pancreatic secretions. Strict antiseptic precautions, "with the exception of the use of the spray," were observed during the operation, and not only did healing take place without any fever and by first intention, but the patient experienced very marked relief, and at the time of the report had survived the operation nearly four weeks. Not only had he survived, but a marked improvement had taken place in his symptoms: the vomiting had stopped, and he had been able to take increasing quantities, first of liquid, and afterwards of solid food. He had also had daily evacuations of the bowels, the stools being firm and brown.

Billroth's case was also one of a cancer of the pylorus too far advanced for removal. The operation was apparently carried out in the same way: it was easy of performance, and lasted only an hour. The patient, however, was seized with biliary vomiting, which continued till he died on the tenth day. An explanation of the vomiting was found post-mortem: there was no peritonitis; but the result of drawing the intestine towards the stomach had been to form a spur which divided the opening between the two viscera into two unequal parts, the larger of which communicated with the proximal portion of the intestine. The result of this was that the bile and pancreatic secretion, instead of passing into the intestine, were poured into the stomach, and the consequence was that which has been described. The author points out the necessity of making sure, to begin with, which is the proximal and which the distal portion of the coil of intestine selected, and then taking care that a thoroughly free communication shall exist between the latter and the stomach, while the former shall be, in a way, valved by making the stomach-wall overlap it. He also suggests that this method of procedure may possibly prove of value in cases of malignant growths in connection with the intestine.—*Med. Times and Gaz.*, Dec. 3, 1881.

Removal of a Cyst of the Pancreas Weighing Twenty and a Half Pounds.

Dr. N. BOZEMAN presented, at a meeting of the New York Pathological Society (*Med. Record*, Jan. 14, 1882), a specimen accompanied by the following history: it was interesting with reference to three particulars: first, as having been removed from the pancreas of a living woman; second, as having been mistaken for an ovarian cyst; and third, as being the first operation of the kind upon record.

The patient was the wife of a prominent physician of Texas, forty-one years of age, tall and robust, weighing nearly two hundred pounds, and perfectly healthy up to seven years ago, except occasional attacks of dyspepsia. Seven years ago she had, for the first time, pain in the right iliac region, extending down the right thigh and occasionally attended with numbness. Five years ago the abdomen began to enlarge, slowly at first, but gradually increased in size upon the left side, with a corresponding flatness upon the right side. The point at which the enlargement was first noticed was higher than would naturally be expected for an ovarian cyst. At that time no special importance was attached to the enlargement of the abdomen, either by herself or husband, who frequently examined the tumour. It progressed in the ordinary way up to six or seven months ago, when it suddenly began to grow rapidly, and finally the entire abdomen was distended symmetrically. At the same time the patient began to lose flesh. The case was diagnosticated as one of ovarian cyst by Professor Richardson, of New Orleans, who advised the patient to consult Dr. Bozeman. On November 19, 1881, the patient having entered the Woman's Hospital, Dr. Bozeman examined her and diagnosticated ovarian cyst. She was also examined by his colleagues, Drs. Thomas and Emmet, both of whom confirmed his diagnosis.

An operation was decided upon, and it was performed on the second day of December, under Listerism. Nothing unusual presented itself in the early stage of the operation. When the tumour was reached through an incision below the umbilicus, its appearance was nearly that presented by an ordinary unilocular ovarian cyst, except, perhaps, it had a little deeper pearlish colour. It was tapped and two and one-half gallons of fluid were removed. After the greater part of the fluid was drawn off, about two-thirds of the cyst was drawn through the abdominal opening, and then, for the first time, Dr. Bozeman suspected that it was not ovarian. He then passed his hand into the peritoneal cavity and found the uterus and both ovaries, and also determined that the cyst had an origin somewhere in the upper part of the abdomen. The abdominal incision was extended upward two inches above the umbilicus. The stomach was then found crowded against the diaphragm, and the bowels were deep in the abdominal cavity below the cyst. The cyst had an extensive attachment, apparently to the transverse mesocolon. After some manipulation he finally reached the pancreas, where he discovered a large vein, subsequently determined to be the splenic, which was very tortuous, and offered considerable obstruction to the operation, owing to its close relationship to the pedicle. Finally he traced the cyst down until he reached the tail of the pancreas, which was turned up on the side of the cyst, and firmly adherent to it to the extent of two inches. He then proceeded to separate the extremity of the pancreas from the cyst by dissection, and when completely separated the pancreas spread out and presented its natural appearance. The attachment of the cyst was at the junction of the outer with the inner two-thirds of the organ, and it had a pedicle three-fourths of an inch in length and about three-fourths of an inch in diameter. The veins of the pedicle were very large. Having fairly reached the pedicle, he transfixed it with a needle, ligated it in the usual way, and cut it off. The result was that he cut out the bottom of the cyst, as shown in the specimen. The portion of the cyst, however, which remained attached to the pedicle was subsequently completely removed by dissection. The artery which supplied the growth was doubtless a branch of the splenic, and it had attained a very large size—as large as the brachial. The loss of blood was small, and not a single bleeding vessel required a ligature. The fluid which the cyst contained was of a light brownish colour, its specific gravity was 1020, and it had an acid reaction, in that respect differing from the fluid removed from the ordinary ovarian cyst, which is alkaline. The girth of the patient before the operation was forty-one inches, and both oblique measurements, from the anterior superior spinous processes of the ilia to the umbilicus, were the same—nine inches. The tumour, with the fluid, weighed twenty and one-half pounds.

The specimen was also interesting in another respect, namely: with reference to the point of attachment, which was almost precisely in the position occupied by the bullet in the late case of our deceased President. The patient underwent special preparation for the operation. She took salicin, fifteen grains three times a day for two weeks. On the morning of the day on which the operation was performed she received fifteen grains of quinine with one of opium, and when she went upon the table she was thoroughly cinchonized. The patient rallied from the anæsthetic and from the operation without any shock whatever. After the operation she took by the rectum, at intervals of six hours, ten grains of quinine with two ounces of beef-juice, half a drachm of liquor opii comp., and two drachms of brandy. On the third day the temperature reached its highest point, 101.5° F., but the pulse never rose above 98. Subsequently the pulse fell to 80, and the quantity of quinine was gradually lessened, but on the eighth day after stopping the quinine the temperature rose to 102.8° F. The quinine was again resumed, ten grains every six hours, and the temperature in the course of thirty-six hours fell to 99.5° F., and subsequently the patient had progressed in the most satisfactory manner, and there was every prospect of a complete recovery.

The Surgery of Cysts of the Pancreas.

The deep position of the pancreas, the extreme rarity of its diseases, and the difficulty attendant upon their discrimination, render any information upon its lesions and their management exceptionally valuable. Bécourt and Douponchel have described cysts of this organ as large as a child's head; but it is only within the past year that this class of tumours has attracted the attention of the operative surgeon. Kulenhampff, of Bremen, records the case of a man, thirty-nine years of age, in whom, at the end of two months, as the result of severe blows upon the belly, received in hoisting a heavy kettle, a tumour made its appearance in the epigastrium. An exploratory incision was made on the 14th of September, 1881, and a few ounces of fluid, which proved to be pancreatic on chemical examination, were withdrawn with an aspirator. Six days subsequently the abdomen was again opened, the peritoneum was united to the incision, and antiseptic gauze inserted into the belly with the view of exciting adhesion between the sac and the walls of the abdomen. The object having been accomplished in four days, the cyst was laid open, a litre of fluid evacuated, a tent inserted, and antiseptic dressings applied. During the next sixteen days fluid constantly escaped in gradually diminishing quantities, the tumour disappeared, and a fistulous track remained, which, under the application of tincture of iodine and nitrate of silver, had completely closed on the 30th of October. The operator alludes to a case in the hands of Thiersch, in which a cyst of spontaneous origin, and supposed to be connected with the tail of the pancreas, was opened and three litres of chocolate-coloured fluid evacuated. The patient recovered, but a fistule remained.

In addition to the foregoing cases, two examples of the removal of cysts of the pancreas, being the only ones of the kind on record, were reported by Rokitansky, of Vienna, and Bozeman, of New York, both of which were mistaken for ovarian tumours. The case of Rokitansky occurred in a woman, thirty-six years of age, who had suffered with signs of ovarian dropsy for nearly three years. On the 27th of February, 1881, the usual incision was made, and the cyst was found to be extensively adherent to the omentum, stomach, descending and transverse colon, the latter of which was torn to the extent of two centimetres; but the rupture was closed with five sutures. During the separation of the adhesions fifty vessels were ligated, the sac was lacerated, and the patient nearly died on the table. The greater portion of the sac was left *in situ*, and the outer wound closed. On death from suppurative peritonitis on the tenth day, the cyst was found to be connected with the tail of the pancreas.

The patient of Bozeman was forty-one years of age, and the disease was observed five years before the operation, which was performed on the 19th of November, 1881. After the greater portion of the fluid had been drawn off, and the attachments to the transverse mesocolon had been severed, the enlarged and tortuous splenic vein came into view, as it rested upon the pedicle of the cyst, which was three-quarters of an inch long and broad, and attached to the tail of the pancreas. This was ligated, and the operation was concluded in the usual way. The tumour, with its contents, weighed twenty-one pounds and a half. Not a single vessel required a ligature. The patient was discharged cured on the thirty-eighth day.—*Medical News*, March 4, 1882.

The Operative Treatment of Floating Kidney by Fixation.

That extirpation of one kidney, and thus of one-half of the entire urine-secreting surface, can be borne by the human organism without instant danger to life, was proved by Simon in his work on the *Surgery of the Kidneys*, published in 1871. It is obvious that various renal diseases will be more dangerous in persons with only one kidney than in those with two, even if a vicarious activity has been set up and a compensatory hypertrophy established. In this opinion Moseler, Oppolzer, and Rayer concur. Of fourteen fatal unirenular cases tabulated by Rayer and Moseler, nine suffered from renal calculus, and seven of them died suddenly from obstruction of the ureter and rapid anuria. Extirpation of a kidney, then, as Simon expressly laid down, is only permissible when the patient's life is seriously threatened by, and all other less dangerous measures have failed in getting rid of, the disease. Floating kidneys have of late years been repeatedly extirpated. Recently, however, Hahn (*Centralblat für Chir.*) has devised a method of fixing the organ by means of sutures, which, both with regard to the operation itself and the future life of the patient, seems less dangerous than extirpation. He has operated in this manner in two cases where all other means had failed. The patients had been confined to bed for weeks and months by severe and constant pain. In neither case could extirpation be thought of. As to the first, there was reason to believe that a calculus existed in one kidney, possibly in the non-movable one; and in the second case both organs were movable. Accordingly he resolved to relieve the patients by what he terms the "operative fixation of floating kidney." In both cases the right kidney was extraordinarily movable, the viscus falling across the middle line to the left whenever the patient lay on that side, and sinking deeply into the right hypochondriac region when she stood upright. The patient having been anæsthetized, a vertical incision was made along the edge of the sacro-lumbalis muscle from the twelfth rib to the crest of the ilium. The quadratus lumborum and external fibrous layer of peritoneum were then cut through, and the kidney with its adipose capsule was drawn backwards into the wound and then secured with from six to eight catgut sutures. (According to Arnold, the kidney is not a completely extra peritoneal organ, but lies between two layers of that membrane, the posterior portion of which may thus be divided without the general peritoneal cavity being opened up.) The whole wound was then stuffed with carbolic gauze. The cases progressed favourably; the dressings were changed at intervals of five days; and at the end of four weeks the wounds were almost entirely closed, and the kidneys remained firmly attached to the points of suture. The following are short clinical histories of the two cases:—

I. Mrs. S. 38, unipara. Ren. mob. dexter produced suddenly three years ago through lifting heavy weight. Suspicion of left-sided renal calculus. Excruciating general pains, sometimes causing loss of consciousness. Operation, as above, performed 14th April, 1881, after which date all pain disappeared, and up to the present (10 weeks since the operation) there has been no recurrence.

II. Miss W., 28, nullipara. Has suffered for two years. Both kidneys movable, the right more so than the left. Symptoms the same as in Case I. The right kidney was fixed with sutures on 10th April, 1881.

As in one case three months almost have now passed without return of pain, we may regard the patient as cured. In Case II. some discomfort remains, and we shall operate on the left kidney in the hope of obtaining the wished-for result. Though the kidneys were firmly fixed at the end of four weeks, they have now, owing to the patient's standing and walking, again become somewhat movable. This motion is upwards and downwards; the inward tendency has disappeared. The adhesions do not seem to have been strong enough to permanently resist the constant weight of the kidney; and it may therefore be advisable, in order to obtain a more secure attachment, to incise the capsula adiposa on the convex margin, and, having separated it from the posterior surface (as does Simon in extirpation of the kidney), to firmly stitch the detached part into the wound. It would be well, also, to fix the kidney at the lowest point in its area of mobility, so as to secure for it a firm basis of support, and to avoid straining the adhesions when the patient stands upright. Experience shows that kidneys fixed in abnormal positions never give trouble, even when very low down. The operation, under antiseptic rules, is devoid of danger, and, as Case I. proves, is capable of removing all the painful symptoms without increasing the danger to life in subsequent injuries or diseases of the kidney. Further, Hahn is convinced that the kidney may be more safely removed by the posterior than by the anterior operation, for during the latter the peritoneum must be cut through several times, a danger altogether avoided in the posterior operation. In this, also, the pedicle is less stretched during deligation, and so less risk of rupture and hemorrhage is incurred. Finally, he would only consider extirpation of a floating kidney indicated when the viscus itself shows signs of disease, or when, contrary to all expectation, nephrorhaphy had failed to effect a cure.—*Edinburgh Med. Journal*, Feb. 1882.

Cases of Nephro-Lithotomy.

At the meeting of the Clinical Society of London, held January 27, reports of four cases of renal lithotomy were read. In Mr. MARCUS BECK'S case, the patient was a young man, aged nineteen, who had suffered for twelve years from symptoms of renal calculus. One year before he applied at University College Hospital his symptoms had suddenly increased in severity, after a profuse attack of hæmaturia. From that time he was practically unable to earn his living on account of the severe pain invariably brought on by any movement. He suffered from considerable frequency of micturition. He only passed blood recognizable to himself on three occasions. Treatment by rest was tried for three weeks without the slightest benefit. During this time no blood was noticed in his urine, but it almost always contained a very small quantity of pus. His symptoms while in the hospital were those ordinarily observed in cases of renal calculus. Examination of the loin under chloroform showed the absence of any recognizable renal tumour. A distinct fulness, which was always clearly visible in the loin, seemed to be due to contraction of the muscles over the tender kidney, and possibly to some hypertrophy. On August 11, 1881, the operation of lithotomy was performed. The incision was slightly nearer the last rib and a little more oblique than the ordinary colotomy wound. The muscles were very thick for so feeble a subject. The kidney was exposed without difficulty in its lower half. Manipulation failed to detect the presence of a stone. The kidney was then punctured with an ordinary darning-needle held in a pair of torsion-forceps, and the presence and situation of the stone were easily recognized. Following the direction indicated by the needle, a knife was passed into the kidney with its edge directed upwards. The bleeding, which was at first very alarming, was arrested by the pressure of a sponge in less than one minute. The wound was then dilated with a pair of polypus-forceps, with which the stone could be felt, but not grasped. The finger was, therefore, inserted by the opening into the pelvis to guide the forceps, and the stone was then easily removed. The bleeding ceased at once. A large drainage tube was inserted with its deep end in the fat about the kidney, and the wound sutured. The whole operation was performed under the carbolic spray, and the wound was closed with carbolic gauze. The stone weighed twenty-nine grains. It was heart-shaped, and had apparently been moulded to the form of a calyx. It was composed chiefly of uric acid. The after-progress of the case was uninterruptedly favourable. The shock of the operation was not great, and lasted only for a few hours. There was considerable vomiting for the first thirty-six hours. He passed no water for twelve hours, and at the end of that time twelve ounces were drawn off by a catheter, after which he passed it naturally. No urine escaped from the wound till the seventh day. It then flowed abundantly till the eleventh day, when it ceased to pass by the wound. At the end of the third week he sat up in bed; at the fourth week he left his bed; and at the end of the fifth week he went to a convalescent home with the wound soundly healed. The temperature never rose above 101.5° Fahr., and even after the eleventh day it remained below 100° Fahr. He suffered no pain after the second day. This case presented all the conditions justifying the operation. The patient was totally incapacitated from earning his living. It might be presumed that the stone was too large to pass by the water, as it had existed in the kidney for a period of twelve years.

Mr. Henry T. Butlin read a paper on a case of renal lithotomy. The patient was a young man, aged twenty, who, for ten or twelve years, had suffered from severe attacks of neuralgia of the testis. The attacks occurred very frequently, and lasted from thirty minutes to two or three hours. After his admission into St. Bartholomew's Hospital, in September, Mr. Willett discovered that the pain was seated in the right side of the abdomen as well as in the testicle, and that the symptoms were those of renal colic rather than of neuralgia of the testis. The urine contained crystals of calcium oxalate, and occasionally a trace of albumen, but no blood or pus. In spite of the pain, the patient's health was fairly good. As treatment did not afford permanent relief, Mr. Butlin cut down on the kidney through a vertical incision in the lumbar region. The kidney appeared to be healthy, but a calculus was discovered and removed from the renal pelvis. It was composed of calcium oxalate, was about as large as a filbert, and quite prickly on the surface. The patient made a good recovery, so that two months after the operation—which was performed on October 5—he was discharged free from pain and quite well, except that a small quantity of pus was present in the urine. Lister's antiseptic dressing was at first employed, but this was abandoned two days after the operation, and the wound was treated, as far as possible, like an ordinary lithotomy wound. Urine ceased to flow through it after about the seventeenth day. This case is of interest, not merely as a contribution to the successful treatment of renal calculus, but as an important contribution to its diagnosis. The absence of blood in the urine is especially remarkable when the situation and nature of the stone are considered.

Dr. Whipham and Mr. J. W. Haward contributed a paper on two cases of nephrotomy for the removal of renal calculus. *Case* 1.—A married woman, aged twenty-three, was admitted into St. George's Hospital, under Dr. Barclay, on

September 10, 1880. The family history was good. The patient gave a clear history of having passed a calculus seven years previously. It was a rough stone, and gave much pain. After this she remained in fairly good health, and although she experienced no paroxysms of pain, yet she was never free from constant uneasiness in the left side. She had never been very robust. Nine weeks before she came under Dr. Barclay's care the pain in the left loin recurred with great severity. She lost much flesh, and the urine became "very thick" and offensive. She experienced pain on micturition. While under observation she complained of shooting pains in the left loin, weakness, and loss of appetite. The abdomen was flattened, and neither dulness nor swelling was detected on the right side. On the left side the muscles were firmly contracted, and therefore no tumour was found. There was great tenderness over the left hypochondriac and lumbar regions, and slightly so in the right groin. The urine contained much pus, and was alkaline. During her residence in hospital she suffered much pain in the region of the left kidney, and had occasional perspiration. Eventually the urine became acid, and the pain was much relieved, and she was discharged, somewhat improved, on October 23, 1880. On March 21, 1881, she was readmitted under Dr. Whipham's care, when she stated that she had in the interval never been free from pain, and that for the past week it had been intense. The urine had been persistently turbid, and she had vomited on March 20. She had noticed a few clots of blood in the urine. The abdominal tenderness was so great that no satisfactory examination could be made. As no improvement took place, Mr. Haward was called in consultation, and he decided to attempt to remove the calculus by nephrotomy. The patient having been placed under the influence of ether, a tumour was distinctly felt in the left loin, and an incision was made as if for lumbar colotomy. The surface of the tumour was exposed, a bistoury thrust into it, and the finger passed into the dilated pelvis of the kidney. A firmly fixed stone was at once detected, and without much difficulty removed, together with a few small fragments. Very little blood was lost. The patient did extremely well, and on July 16 was discharged, there being still a little discharge from the sinus in the loin, and a small quantity of pus in the urine. The stone weighed forty-seven grains, and was composed of phosphate of lime. The second case was that of a woman aged fifty-six, who was admitted under Dr. Whipham's care on October 3, 1881. She had suffered pain on micturition for several years. In 1879 both gravel and blood were present in the urine. She was not aware that she had passed a stone. In October, 1880, she had a sharp attack of vomiting, followed by pain in the left lumbar region and hæmaturia. While under observation, she complained of an increase of this pain, and the belly was generally tender. There was great muscular resistance on the left side, and fulness and tenderness on pressure on the right side. Fluctuation was detected on October 6 in the left loin, and Mr. Haward, who saw the patient on that day, made an incision into the swelling. During the night a copious discharge of pus occurred, with great relief to the pain. No calculus could be found; the urine contained much pus. On November 3, the patient having become worse, the incision was extended, and the wound thoroughly explored. No calculus was found; but as the kidneys and tissues were so firmly matted together, no further operation was deemed advisable. The patient died next day. At the post-mortem examination it was found that the kidney lay in a cavity, whose contents were purulent; that its pelvis was dilated, and communicated with this cavity by a large irregular opening, through which one or two fingers could be passed. Two or three small fragments of stone were found in the calyces; a large branching calculus occupied the calyces of the right kidney. These two cases were brought forward as illustrating the propriety of cutting into the kidney in cases where the diagnosis of renal calculus is clearly established, and as affording encouragement to the surgeon to perform the operation of nephrotomy in the earlier stages of the disease, rather than to postpone surgical interference until dilatation or suppuration of the organ had occurred.

Mr. **Clement Lucas** related a case in which he cut down upon the kidney, but failed to find a stone. The patient was a man, aged forty-nine, who, two years before, had suffered from acute pain and hæmaturia. These symptoms passed away, and he remained free from them for six or nine months, when he was again attacked with profuse hæmaturia, and became very anæmic. He passed triangular clots, presumably casts of the renal pelvis. After a month's observation Mr. Lucas performed the exploratory operation under antiseptics. He regretted that he did not also explore the organ by acupuncture, but at that time thought this was a more dangerous procedure than it had been shown to be. Eleven days after the operation the patient was sitting up, and on the seventeenth day he left the hospital with the wound soundly healed. Great relief was obtained. He had since returned with evidence of phthisis, so that it was possible he had strumous disease of the kidney. Mr. Lucas remarked on the simplicity of such exploratory measures, which he would recommend in any doubtful case.

Mr. **Barker** said that the danger of hemorrhage from the renal incision was not great. He referred to Prof. Brandt's case of "hernia of the kidney," following a wound in the loin, the organ being removed on the fourth day after injury. Mr. Barker had related this case in his paper in the *Medico-Chirurgical Transactions* (vol. lxiii.). In one case, he was struck with the rapidity with which the bleeding ceased after incision of the organ; and that was also shown in Mr. Beck's case, where very moderate pressure sufficed to arrest the bleeding. Such facts proved that incision or puncture need not be feared.

Mr. **Morrant Baker** pointed out the importance of recognizing a totally different class of cases from those just recorded—such cases as the one he related in a paper at the Congress, where there was a renal abscess; on exploration, there was found a large branched phosphatic calculus, which was only dislodged with much difficulty and considerable hemorrhage. The calculus weighed nearly two ounces. The patient never rallied, and died three days after the operation. This kind of case was distinct from cases where only small stones occurred; and it was a question whether, in such a case, it would not be better to remove the whole kidney.

Mr. **Barwell** had not removed a stone from the kidney, but had removed the whole kidney. He thought it desirable not to let cases in which the presence of a stone was suspected go on, with prospect of ultimate damage to the organ, when a simple incision and puncture would indicate the nature of the mischief. The incision, too, was made in a part free from danger. Hardly any pyrexia followed. It would be interesting to learn whether a stone would again form, or the kidney become mobile.

Dr. **Barlow** said that Mr. Morris had laid great stress on the difference between cases in which the kidney was healthy and those where pyelitis and destructive changes existed. This point required to be insisted on, for cases such as that described by Mr. Baker belonged to the second class. About three years ago he (Dr. Barlow) had under his care a Jewess, about forty-seven years old, passing pus in the urine, and who had had pain and swelling in the right loin for eight months. Mr. Couper was consulted, and a grating sensation was felt in the swelling. An incision was made, and pus escaped from the kidney, which contained three large calculi. The organ could not be removed; and death took place next day. It was manifestly unfair to nephro-lithotomy to contrast it with such cases as these.

Dr. **Longhurst** pointed out that the successful cases appeared to be those operated on in early life; the fatal ones in older subjects. He knew of a nobleman, the subject of renal calculus, who was advised by a surgeon in Paris to submit to this operation, but he would not accede, and a year later, after a similar attack to that which he had undergone formerly, he died. Both kidneys were found blocked by enormous calculi. In another case, a patient who had symptoms for eighteen months passed one or two small stones per urethram. Hence discretion should be exercised in the selection of cases for operation.

Mr. LISTER said the Society and the authors were to be congratulated on this important series of cases. They were of interest pathologically, for they dealt with calculi of different composition—oxalic, uratic, and phosphatic; and as illustrating the long time that calculi might remain in a kidney without increasing in size, so different from the case of vesical calculi. It seemed as if there were greater concentration of urine in the bladder than in the kidney. The question of diagnosis was also very interesting; almost the sole symptom in Mr. Butlin's case was the neuralgia in the testicle, hæmaturia being absent. It reminded him of one of John Hunter's cases of stone in the bladder. As to the operation itself, the incision in the loin was devoid of danger, especially if antiseptics were used. He thought an acupuncture-needle more convenient to explore the kidney than the needle used by Mr. Beck, who, however, was not only able to detect the *presence* of the stone, but also to estimate its size. By such a method the surgeon might decide whether the stone were too large to be extracted from the organ, which would then have to be removed entire. The free hemorrhage, and its rapid arrest in Mr. Beck's case, reminded him (Mr. Lister) of the hemorrhage that ensued on incision of the liver in a case of hepatic abscess seen with Sir Joseph Fayrer. Sir Joseph remarked that such free bleeding often occurred, and was of no consequence. In the renal operation, it seemed better to incise the renal substance than the pelvis of the organ.

Mr. HAWARD, in reply, said that he was glad to have heard the opinions in favour of early operation, and agreed with Mr. Baker that in advanced cases removal of the whole organ was preferable to attempted extraction of the calculus. Removal of the kidney in these cases was not always a simple matter, and sometimes impossible—*e. g.*, in the second case related by Dr. Whipham and himself. —*Med. Times and Gaz.*, Feb. 4, 1882.

A Case of Partial Resection of the Small Intestine.

MOLODENKOW and MINN report in *Centrlb. f. Chirg.*, 1881, No. 46, a case of right inguinal hernia of one and a half year's standing, in a man aged 21 years. Strangulation had existed for four days when the patient was seen, and vomiting, meteorism, elevated temperature, and redness of the skin over the temperature were present. Herniotomy was followed by the escape of offensive fluid, and the loop of gut was found to be gangrenous, perforated at two points, and much discoloured over its whole extent. Partial resection of the diseased portion was performed between heavy threads of silk passed around the sound portion and the fingers of an assistant, and partial ligature of the mesentery with catgut, and its separation with the intestine. The two borders of intestinal wounds were then united with twenty-five double fine catgut sutures. The sac was extirpated, and the external wound closed with silk sutures, and a double drainage-tube inserted into the abdominal cavity, through which a solution of borated solution, 1 to 20, was injected. Vomiting and fever soon disappeared, and a normal stool was passed on the third day. The drainage-tubes were removed at the end of three weeks.—*Arch. Gén. de Méd.*, Jan. 1882.

Resection of the Intestine: Cure.

Roggenbau reports in *Berlin. Klin. Woch.*, No. 29, 1881, the case of a woman, aged 74 years, who had had an easily reducible right crural hernia for thirty years, in whom strangulation of the intestine had occurred thirty-six hours before her admission into the hospital. She then had bilious vomiting, but no peritonitis; as energetic taxis had already been fruitlessly performed, herniotomy was at once resorted to under the antiseptic spray. A rupture of the intestine being produced in the attempt to reduce the hernia, a portion of the intestine, 32 centimetres long on its convex border, was resected, and the Czerny suture with carbolized silk made use of, the two ends of the intestine being compressed at the ring by means of sponge during the insertion of the suture. The sutured intestine was then reduced, and the sac and mesentery ligated and excised. The first fecal passage was on the fifth day after a dose of castor-oil. A cure was effected.

V. Baum reports in the *Berl. Med. Woch.*, No. 20, 1881, a case of right crural hernia occurring in a woman, aged 48 years, on an attempt to lift a heavy weight, and which was irreducible, immediately followed by symptoms of strangulation of the intestine; herniotomy was performed four days later. When admitted to the hospital, two and a half months later, an artificial anus ½ centimetre in diameter had been formed from gangrene of the intestine situated two centimetres below Poupart's ligament. Resection of the intestine was performed, Gimbernat's ligament and arch being divided, and the intestine drawn out for a length of eleven centimetres on its convex border, and five and a half on its concave border. Czerny's suture was employed with carbolized silk; the operation was performed under antiseptic precautions. On the second day gas escaped by the anus; on the fourth, liquid stools, and on the sixth day the fecal evacuations became normal. At the end of six weeks, in spite of a suppurative parotitis, the patient was discharged from the hospital cured.—*Arch. Gén. de Méd.*, Jan. 1882.

Rupture of the Intestine.

After several specimens had been exhibited at the Vienna Medical Society (*Wien Med. Woch.*, 1881, No. 47), Prof. Albert observed that he had for some years past laid down the position that no clearer indication for the performance of laparotomy can be furnished than by rupture of the intestine. The difficulties of the operation are undoubtedly very great, consisting in the difficulty of the diagnosis, and in discovering the injured part. It is true that several cases have been recorded in which the patient lived for some days, but still they always terminated fatally. As from expectant treatment nothing is to be hoped, we should endeavour to overcome the difficulties in the performance of the operation. As to diagnosis, rupture of the intestine has the following points in its favour: the violence of the force producing it; the special liability of the rupture to occur at certain parts of the canal, the most usual of these being in the vicinity of the duodenum; and the severity of the pain. According to Beck, in mere contusion of the intestine the pain gradually at times diminishes, and is aggravated by pressure, while in rupture it is continuous. The presence of air in the abdominal cavity also favours the supposition of rupture existing.—*Med. Times and Gaz.*, Jan. 28, 1882.

Splenotomy in Leucocythæmia.

In the *Lancet* for February 11th, Mr. Herbert Collier publishes a table in which it is seen that out of a total of twenty-nine cases splenotomy has been performed no less than sixteen times for leucocythæmia, and on thirteen occasions for various other morbid conditions of the spleen. It is equally apparent that out of the thirteen cases in which leucocythæmia was absent, no less than eight recoveries are recorded; while out of the sixteen in which the latter disease was present, there is no instance in which the patient recovered even from the primary effects of the operation. Now, it must strike the most casual observer that the fatality, in these latter cases, is due to something outside the mere effect of the operation, which in itself appears to be less dangerous than one might reasonably be led to expect. And surely, few will deny, although many appear to forget, that this "something" is actually present in these cases, and readily explains the cause of surgeons losing at the rate of a hundred per cent. after splenotomy in leucocythæmia. "Firstly, that the enlargement of the spleen in leucocythæmia appears to be only a part of a general disease affecting the glandular system as a whole; and, secondly, that in splenotomy for such a disease there is a predisposition to hemorrhage, with which surgery is incompetent to deal. It can neither be foreseen by any amount of care, nor coped with by any amount of skill. Under these circumstances there is no shirking the conclusion that the operation is physiologically unsound and surgically unsafe, and for leucocythæmia should not be performed."

A New Method for the Operative Treatment of Extrophy of the Bladder.

Encouraged by the results of the experiments on animals by Gluck and Zelier, and on account of the difficulty and usually unsatisfactory results of the ordinary operations, E. SONNENBURG operated on a boy aged 9 years with a great defect of the anterior wall of the bladder, and projection of the posterior wall, by extirpating the bladder and connecting the ends of the ureters in the dorsal groove of the penis. In order to avoid unnecessary injury to the ureters, the vesical mucous membrane was excised from above downwards, carefully separating it from the peritoneum, and avoiding the ureters, which was facilitated by their distension with sounds. Only slight bleeding was caused, and that was easily restrained by ligature; great care was also taken to avoid the inguinal canal, so as not to cause an inguinal hernia. After the bladder was freed on all sides, it was separated from the pubic bones, and the ureters then carefully dissected out from the vesical wall, and fastened with stitches into the vivified dorsal groove of the rudimentary penis, the prepuce being sewed to the perineum in order to draw the ends of the ureters out from the wound. The next step of the operation was the closing of the defect in the abdominal walls. During the first four days the urine was conducted externally by catheters inserted into the ureters, and by salicylated compresses, when union of the ureters to the penis had completely taken place, and four weeks later the entire abdominal wound was closed with the exception of a space the size of a dollar, which was filled with healthy granulations.—*Centrlb. f. d. Med. Wissen.*, Jan. 14, 1882.

Treatment of Wounds of the Bladder.

In an original memoir (*Revue de Chir.*, Nos. 6 and 7, 1881) on penetrating intraperitoneal wounds of the bladder, Professor E. VINCENT of Lyons states that the operation of laparotomy is the only suitable treatment for such injuries when followed by an abundant effusion of urine into the peritoneal cavity. This treatment alone permits—1. Direct inspection of the seat of injury; 2. The determining of the presence and of the nature, if they are present, of complications; 3. Removal from the abdomen of effused blood and urine; 4. Cleansing and disinfection of the peritoneal cavity; and, finally, the prevention of further effusion of urine by applying sutures to the wound through the coats of the bladder. This plan of treatment is rendered justifiable by association with the antiseptic method, and also by the success of laparotomy in abdominal surgery. Moreover, in cases of penetrating wound of the bladder, death is an almost certain result if nothing be done, and even if any treatment short of laparotomy be applied. From an analysis of three reported cases in which wound of the bladder has been thus treated (Walter of Pittsburgh, Heath, Willett), and also from the results of numerous experiments on dogs, Dr. Vincent has drawn the conclusions that it is of great importance in instances of this injury to have recourse to laparotomy as early as possible, and that in this plan of treatment particular care must be taken in applying the sutures to the vesical wound. His experimental researches have demonstrated, it is stated, that intraperitoneal wounds of the bladder are capable of healing by primary intention if securely closed by suture, and that this union is accomplished very rapidly by all the coats of the bladder, except by the epithelial layers of the mucous coat. The outer layer of this coat and the muscular coat join together very quickly, yet with less readiness than the peritoneal coat, the proliferation of which commences almost immediately after coaptation. The sutures are applied very closely together, and in a double set. In one set—the sero-muscular—each suture is passed through the peritoneal and muscular coats of the bladder on each side of the wound; in the other set—the sero-serous—the peritoneum only is traversed, a considerable width of this coat being included on both sides, so that when these sutures are tied wide serous surfaces are brought together in close contact. The mucous membrane of the wounded bladder is not included in any of the sutures.

Dr. Vincent concludes from his experiments on dogs that by this plan the wound may be securely closed, and that sutures thus applied will resist vesical tenesmus, and any effort of active contraction or of passive expansion that may subsequently be made by the bladder. There need not, he states, be any fear of subsequent perforation of the vesical wall, through formation of fistulæ along the track of the sutures or in the intervals, or of any ulterior deposition of lithates around sutures shed into the cavity of the bladder. The sutures, being intraparietal, remain in or near the outer surface of the organ. In cystorrhaphy the author prefers a suture of silver wire or of silk to one of catgut. The last material breaks too readily, and is likely to melt away too quickly. Before closing the abdominal wound, it is thought necessary to test the security of the vesical suturing by injecting some coloured and indifferent fluid into the bladder.

From a series of experiments on dogs, Dr. Vincent has made out that gunshot wounds also of the bladder heal by immediate union after application of sutures according to the above described method, unless the deflagration of the powder, or the heat of the projectile, have destroyed the vitality of the tissues at the edges of the wound, and rendered local gangrene inevitable. In such cases, the burnt lips of the perforation should be removed, and adjacent portions of the vesical walls also excised, until the tissues are seen to bleed on section. Dr. Vincent states that, in his experiments on dogs, he has now proved that, as a rule, immediate union results from the immediate application of sutures in intraperitoneal wounds of the bladder by laceration, and through the action of cutting instruments and fire-arms. In such cases, laparotomy, with suturing of the bladder and removal of blood and urine from the abdominal cavity, is likely to prove successful on the dog, when performed within eight hours and a half after the receipt of injury; but in Dr. Vincent's hands, always failed after an interval of twenty-four hours, the animals having succumbed to urinary poisoning. In conclusion, Dr. Vincent, impressed by the success of his experimental investigations on early laparotomy and stitching of vesical wound, argues in favour of suprapubic over perineal lithotomy, and asks why the former operation, which affords free and ready access, is exempt from the danger of wounding important vessels, and is less likely to result in phlebitis and septic poisoning, is not more frequently practised.—*London Med. Record*, Jan. 15, 1882.

Spontaneous Cure of Spina Bifida.

Mr. R. A. DOUGLAS LITHGOW publishes the following case: Mrs. V., a healthy woman of the labouring class, free from any hereditary taint so far as could be ascertained, was delivered by an assistant of a female child, which was found to be the subject of spina bifida, although in all other respects healthy and well developed, in October, 1879. The mother received instructions as to local treatment, especially as regarded careful nursing. The tumour, about three inches in diameter, and circular, was situated over the last two lumbar vertebræ in the median line, where a large sulcus could be felt. It was semitransparent, fluctuating, evidently the result of arrested development in the spinous processes and laminæ, and the largeness of the sulcus in the canal enabled the tumour to assume the non-pedunculated form. The tumour was very tense and shining whilst the infant was held in the sitting position, and I had no doubt that it communicated with the cavity of the theca. In February, 1880, when the child was more than three months old, the diameter of the tumour had increased to five inches, thus giving about fifteen inches as the circumference; and it projected one inch and a half from the plane of the body. Otherwise, there was no apparent difference; and, in the mean time, the child had thriven well, and been free from any symptoms of hydrocephalus, convulsions, paralysis, or local inflammation.

When the child was six months old, the tumour began to lessen, and at the end of ten months it had entirely disappeared. When sixteen months old, I had an opportunity of making another examination, when there was nothing to be seen but an indurated cicatrix, almost level with the surrounding skin. The bones were completely ossified, and the child in perfect health.—*Brit. Med. Journ.*, Feb. 11, 1882.

Control of Hemorrhage in Hip-joint Amputations.

In the *Archiv für Klin. Chirg.*, Bd. 26, Heft 4, Prof. TRENDELENBURG, of Rostock, describes a method of amputation at the hip-joint which he has devised with the view of avoiding the risk of severe hemorrhage, so apt to be experienced in this operation. The principle of this method is the compression of the entire tissues of the flaps before the division of the large vessels, before, indeed, the flaps are cut. In this JOURNAL for Oct. 1876, Dr. David Newman gave a description and drawing of a knife which he had devised for amputation at the hip-joint, in which exactly the same principle is applied. Professor Trendelenburg, indeed, seems to have derived his idea from Dr. Newman, for he acknowledges that his operation is similar to that proposed by him. The description of Trendelenburg's operation is as follows: A steel rod 38 ctm. long, 6 mm. broad, biconvex on section, and 2 mm. thick at the centre, with blunt edges, but provided with a removable lance-shaped point 3 ctm. long, is passed obliquely through the soft parts in front of the joint, in the same way as the two-edged knife in the well-known method of Lisfranc, only about 2 ctm. higher. The rod enters therefore about 4 ctm. below the anterior superior spinous process of the ilium, passes between the femur and the femoral artery, and emerges at the fold of the scrotum. The point is now removed, and an elastic tube or band firmly wound in figure-of-eight fashion round the ends of the rod, and passing in front of the thigh. In this way the great vessels of the thigh, and all the soft parts in front of the joint are compressed. Lisfranc's knife is then introduced 1 to 2 ctm. below the rod, and by cutting from within outwards in the usual way the anterior flap is formed. If an elastic bandage has been previously applied to the limb slight bleeding may take place from the surface of the wound not belonging to the flap, and some small arteries may require to be tied. In the flap the femoral artery and vein and any larger vessels observed are next ligatured, the India-rubber band is then loosed, the rod removed, and the ligaturing of the vessels in the flap completed. Next follows the opening of the joint by an oblique incision, the division of the ligamentum teres and the posterior part of the capsule, in which no hemorrhage of any account takes place. At most the acetabular artery spouts. The head of the bone having been freed, it is disarticulated, and the steel bar passed obliquely behind it through the soft parts. The direction of the bar is parallel to its former position, the point of entrance lies about 2 ctm. behind that of Lisfranc's knife, and the point of exit is at the tuber ischii. In its passage the rod traverses the open joint at the lower edge of the acetabulum. By winding the band round both ends of the rod, and across the posterior surface of the thigh, the soft parts situated behind the joint are compressed, the Lisfranc knife is obliquely introduced behind the head of the bone, and the limb completely separated, a small posterior flap being formed. Finally, the gluteal arteries are ligatured, the tube loosed, and the rod removed. Slipping of the rod and tube is impossible, as the rod lies each time in the special canal formed by the puncture.

Trendelenburg has operated in this way in a case of rapidly growing sarcoma of the lower half of the femur in a girl aged 15. The wound suppurated at first pretty profusely, and some portions of tissue sloughed. How far this was the consequence of excessive constriction Trendelenburg cannot say. The wound healed with open treatment and rest. The patient died two months after with pulmonary symptoms, due as was shown on *post-mortem* examination to secondary sarcomatous deposits in the lungs.—*Glasgow Med. Journ.*, Feb. 1882.

Subcutaneous Division of the Neck of the Femur for Ankylosis.

A committee of the Belgian Royal Academy of Medicine has sent in the following interesting and critical report on a case of Adams's operation of "subcutaneous section" of the neck of the femur for rectangular ankylosis of the hip. A young man, aged 23, with one hip ankylosed in a bad position, came to M. SERVAIS to have the condition remedied. When standing erect, he could not touch the ground with the toes of his left foot, unless his back were enormously hollowed. When lying supine with the back flat, the left thigh was perpendicular. Walking was difficult. He had borne with his deformity for twenty years, but in 1879, he wished to marry, and love brought him to the consulting-room of M. Servais, who proposed to him the operation. (Then follows a brief history and description of Adams's operation.) In M. Servais' operation, the section of the bone by sawing occupied three-quarters of an hour. The limb was afterwards placed *dans une position physiologique*, and over the wound was applied a compress wet with a solution of arnica (6 to 100). The limb was enveloped in plaster-wadding ('gypso-ouaté). This dressing was removed in five days, and extension was resorted to. All went well for twenty days, when the patient became intractable, got up without leave, and a serious accident resulted. The fragments of the freshly divided femur wounded either the femoral artery or one of its large branches, and an alarming hemorrhage came on. Informed of this occurrence twelve hours afterwards, M. Servais, without hesitation, tied the femoral artery below Poupart's ligament. The hemorrhage ceased, but another danger supervened. Blood was extensively infiltrated, the patient was weak, and inflammation attacked the thigh. Large incisions, drainage, and an internal treatment by tonics, successfully combated this inflammation; the patient was saved.

Towards the end of the second month, M. Servais applied Taylor's apparatus; on the seventy-fifth day the patient left his bed. From the sixth month the young man's condition was excellent. The success of the operation was henceforth undeniable. The deformity has gone, the man walks without limping and without apparatus; the limb has developed since the operation. The union of the fragments is very firm; but, from time to time, a small opening appears, and gives egress to a few fragments of bone. The general state is better than before the operation. For more than a year, the young man has resumed his work as a lapidary. If this operation shows the ability of the operator, it shows also the dangers which the operation caused this young man to run. If we add to his risks a case of death from purulent infection, and another case of death from hemorrhage, resulting from a wound of the femoral artery, it will be seen, perhaps, that for a list of fifty cases of "subcutaneous division of the neck of the femur," the account of accidents which may complicate this operation is already serious.

The committee are astonished that this deformed ankylosis of the hip, existent throughout the period of growth and of development, has not brought with it a shortening of the limb, capable of impeding walking, in spite of the operation. We regret that in his work, unfortunately very curtailed, the excellent English surgeon has told us nothing about this point. Without accepting, concerning the benignness of "subcutaneous section of the neck of the femur," the opinions of MM. Adams and Servais, the committee judge that this operation is indicated in the cases where a vicious ankylosis of the hip makes the limb useless. But the surgeon ought to be well persuaded, and he should not permit the patient or his friends to remain ignorant that the operation is serious, and he should only operate when asked. In the case of deformed ankylosis of the hip, surgeons have put in practice, for many years, a method less dangerous than that of Adams, viz., fracture of the neck of the femur. Nélaton, Péan, Tillaux, and many others, have been most successful with it. We are the more compelled to recall this success, because it has been gained with less risk to the patients. [In the course of the subsequent discussion, it appeared that the committee had never seen the patient whose case is the subject of the report.—*Rep.*]—*London Med. Record*, Dec. 15, 1881.

Resection of the Hip.

The following is an abstract of an original article by Prof. OLLIER on resection of the hip, with regard to its indications and its definite result (*Revue de Chir.*, Nos. 3, 5, and 7). Resection of the hip is regarded by the author as one of the great gains of modern surgery. The failures that attended the earliest attempts at this operation in France prove nothing against it. When practised on rational indications it is very often attended, in young subjects of suppurative coxalgia, with results that are favourable with regard to the preservation of life.

The dangers of this operation have been considerably diminished through the antiseptic method. But in estimating the gravity of the proceeding, one should not forget that in its application to cases of severe and progressive coxalgia, an affection likely to terminate speedily in death, it ought not to be reproached with those cases which it has not been able to cure, but, on the other hand, should only be credited with the patients that it has saved. Statistics, which give merely the numbers of recoveries and deaths, can lead but to erroneous conclusions. The great mortality that has attended the performance of the operation in France is due to the fact that it has been applied only in desperate cases, whilst the success of operators in other countries is to be attributed mainly to earlier recourse to operation, and to frequent intervention in cases where cure might have been probably effected by drainage and rest. It is this difference in the appreciation of indications, according to localities and epochs, that renders difficult any comparison of diverse series of observations. Considered with regard to the ulterior growth of the resected limb and the orthopædic and functional result, the value of resection of the hip has hitherto, notwithstanding the great number of observations recorded in statistical tables, not been definitely appreciated. Much confusion has prevailed on this point, through inexact measurement and too hasty observation. The arrest of growth which follows resection of the hip bears relation to the importance of the conjunctive cartilages sacrificed during the operation, and to the change in the nutrition of the limbs, due to the primary lesion and to the disturbance of function which this has caused.

The arrest of growth, from this latter point of view, cannot be ascribed to the resection; since this operation has for its aim and result the removal of the cause which impairs the general nutrition of the limb. The femur, like all the long bones of limbs, does not grow equally at its two extremities. The growth at its lower extremity about doubles its growth at the superior extremity, in other words, whilst it is extending downwards by half an inch, it extends upwards by only a quarter of an inch. This relation of one to two between the two conjunctive cartilages of the femur is not constant during the whole period of growth. It represents the total growth from birth to adult age; but, at the beginning of life, the upper extremity of the femur grows faster than the lower, and until the fourth or fifth year, the growth of the bone takes place equally at its two extremities. At the end of the fifth year the rate of growth at the superior extremity is reduced in relation to that at the inferior extremity. From the age of four years to the completion of growth, the relation does not exceed one to three; that is to say, the femur gains one centimetre above, whilst it gains three centimetres below.

Removal of the cartilage of conjunction from the upper extremity of the femur of a subject under the age of four years, renders this bone liable to an arrest of growth (about nine centimetres) in consequence of the abstraction of the physiological elements of its increase in length. To this cause of arrest of growth must be added the general atrophy of the bones of the limb, and the deficiency which will result through an extensive diaphysal resection, when care has not been taken to preserve the periosteal sheath. The conjunctive cartilage of the head of the femur is the only cartilage of the upper extremity of the femur which serves for the increase in length of this bone, considered either from a statical or from a functional point of view, in walking and standing.

The "serviceable length" of the femur is measured by the distance from the inferior bicondyloid plane to the most elevated point of the head. The continuation of the increase in length through the subtrochanteric cartilage after decapitation of the femur, does not compensate for the arrest of growth at the neck of the bone. The subtrochanteric cartilage assists in the growth of the femoral diaphysis or, at least, in that of its external part; and thus, notwithstanding removal of the head and neck of this bone, the femur after resection of its upper extremity will seem to be as long as the sound bone of the opposite side, if it be measured from the summit of the trochanter to the inferior border of the outer condyle. But this length of the external border does not represent the "serviceable length" of the bone. Notwithstanding the almost equal length of two femora measured along their external borders, the limb on the side of the operation may really be shorter by several inches, in consequence of elevation of the femur on the pelvis.

After resection of the hip an articulation, movable and at the same time strong, may be formed between the thigh and the pelvis. But the type of articulation is completely changed. Instead of a head rolling in a cavity, there is the upper extremity of the femur united to the pelvis by fibrous bands, firm, but still more or less supple, so that in locomotion there is always a tendency in the femur to ascend, and in the pelvis to descend. The pelvis is thus suspended, as it were, on the femur.

The subperiosteal method alone enables us to take advantage of all the elements which can contribute to produce an articulation, which is, at the same time, both movable and strong. Through the abundance of the periarticular fibrous formations, the chances of ankylosis are, all other things being equal, much greater after resection by the subperiosteal method than after resection performed by the old method.

The arrest of growth of the femur after resection of the hip may be compensated by inclination of the pelvis. It is this compensation that may lead one to regard the lower limbs as almost of equal length, although the resected limb may really be seven or eight centimetres shorter. The possibility of obtaining, by suitable consecutive treatment, this sinking of the pelvis on the side of the operation, neutralizes in great part the inconveniences of resection from the point of view of ulterior growth of the limb.

Notwithstanding the good orthopædic and functional results that may be attained by resection of the hip, particularly if it be performed before the appearance of irreparable disorders in the bone and in the peripheral tissues, this operation should not be applied except in cases with very clear indications, and until after all the resources of rational expectation have been tried. The cases in which the surgeon should at once have recourse to operation are very rare, and the chances of the success of preliminary operations (repeated puncture, incisions, arthrotomy) are much increased by the practice of antiseptic dressings.

But it is necessary to have recourse to resection in cases where the bad symptoms increase, notwithstanding antiseptic incisions and drainage.

It is difficult to be clear *à priori* of the osseous or articular origin of hip-joint disease ; but although in the infant the disease is generally osteopathic in the first place, and for this reason apparently favourable for resection, cure may yet be attained in the majority of instances of suppurating infantile coxalgiæ through a methodical expectant treatment, aided by the resources of hygiene. But resection, suppressing at once tubercular deposits of osseous origin, is, in cases which have no tendency to recover, the surest means of removing the source of suppuration, and of preventing general tubercular infection.

The results of resection will be the better from an orthopædic and functional point of view, and will resemble the more those obtained by experiments on animals, the earlier the period at which the operation is performed.

Although a movable articulation may be always attained by a well-conceived operation and well-directed after-treatment, the surgeon ought not always to seek for such result. Under the conditions in which resection for articular suppuration is most frequently performed, it is better to have an osseous ankylosis in good position when the patient is compelled to work for his living. With osseous ankylosis of the limb in good position, we have a limb that is, speaking generally, more useful than a movable limb, and one less liable to relapse.

Resection performed in cases of injury or of acute suppurative arthritis will, without doubt, afford all that a well-arranged operative method may permit one to expect; but when the bone is much diseased, and surrounded by disorganized soft parts, the surgeon is more likely to attain, through his operation, an imperfect articulation, and one liable to inflame afresh under the influence of repeated pressure, and of movements of the limb. After resection, or after hip-joint disease, with prolonged suppuration, osseous or strong fibrous ankylosis is the most sure means of attaining radical cure, or at least a positive cessation of bad symptoms.—*London Medical Record*, Jan. 15, 1882.

Galvanism in Coxalgia.

M. VERNEUIL brought under the notice of the Paris Société de Chirurgie, at a meeting in October, an episode in the progress of coxalgia, which has not been sufficiently noted by writers on the subject, viz., a special form of recurrence of coxalgia after apparent cure. He gave the following as a type of this class of cases:—

Five years since, he saw, with M. Leudet of Rouen, a girl aged 9 who was attacked with coxalgia of a mild form at the outset, which M. Verneuil thought from its antecedents to be of a rheumatic character, and of which he made a favourable prognosis. The child was placed in a Bonnet's apparatus, which, shortly afterwards, was succeeded by Bouvier's trough. The cure was tedious; a small abscess formed outside the joint, and was cured in a fortnight. Fifteen months ago, that is to say, three years and a half after the appearance of the affection, M. Verneuil declared the child to be cured. Both limbs were of precisely the same length; there was not the least lumbar lordosis, and there was only a small remnant of stiffness in the joint. During this time, the girl had become considerably developed, and the menses had appeared. M. Verneuil, therefore, announced that cure was complete. Shortly afterwards, the father of the girl came to tell him that she limped, and in six months the patient was again under his charge. There was, again, considerable deformity, very marked lumbar lordosis; apparent shortening was brought on by the drawing up of the pelvis, but there was neither swelling nor pain, nor any trace of inflammatory action. The faulty position was reproduced without any trace of inflammation. Several surgeons having persuaded the father not to proceed further, and persisting in declaring the child to be cured, although the deformity continued to increase, she was again brought to M. Verneuil. He sought for something in the case analogous to the mechanism of flexion consecutive on inflammation of the knee by paralysis of the triceps, and discovered that the muscles of the nates were completely paralyzed. He thought, therefore, that the deformity was reproduced by the contraction of the psoas, the adductors, and the sartorius muscle. Under anæsthesia, by chloroform, he corrected the faulty position; the straightening was perfect, and there was complete symmetry. He again placed the girl in one of Bonnet's troughs; a month afterwards he applied Bouvier's apparatus, ordering that it should have a lengthened trial; and also ordered faradization of the gluteal muscles; but it was a very long time before any good results followed this treatment.

The latter fact gave to M. Verneuil the explanation of many others; the case was one of recurrence of deformity without return of inflammation of the joint; of muscles consecutively rendered powerless, whilst the antagonistic muscles retained their contractility. These facts led M. Verneuil to find in the muscular system a physiological explanation of the two periods of coxalgia. In the first stage, there are abduction, rotation outwards, evident lengthening, and permanent flexion. In the second stage, there are, on the contrary, abduction, rotation inwards, and shortening by the raising of the pelvis. These observations led M.

Verneuil to form the following theory: The inflammation of the joint is propagated to the muscles immediately in relation with the capsule, that is to say, to the psoas and the small gluteal muscles, leading to elongation of the limb with abduction. After a time these muscles become atrophied and lose their power; the inflammation spreads to the most distant muscles, that is to say, to the abductors and the sartorius; then come rotation inwards, shortening by elevation of the pelvis, that is to say, metamorphosis of position in the first stage of coxalgia; in the second period, slow contraction of the healthy muscles at the same time with the impotence of the muscles originally attacked. An important therapeutical indication is deducible from this fact, that of galvanization of the enfeebled muscles.—*London Med. Record*, Dec. 15, 1881.

Isolated Disease of the Semilunar Fibroid Cartilages in the Knee-Joint.

In a recent paper with reports of cases (*Centralb. für Chir.*, Nos. 44, 45, 1881) Professor KOCHER of Berne, after a reference to the views of Volkmann on the important part played in fungous articular disease by primary circumscribed deposits in bone, states that other structures of a joint may be the seats of isolated disease, resulting after a time in general articular disorganization. Three instances are recorded from the author's practice of circumscribed fungous disease of the internal meniscus of the knee, which disease he would call meniscitis fungosa. In one of these cases, the subject of which was a man, aged 65, the disease had lasted for nearly nine months, and had obstinately resisted treatment. Shortly before the case came under the author's notice, there had been swelling of the knee from serous effusion. This patient was cured after the application over the swollen and tender meniscus of the actual cautery. In the two other cases, one patient being twenty-one, the other six years of age, there was not only intra-articular effusion, but the disease had gone on to suppuration and the formation of sinuses. In each of these cases, the diseased meniscus was excised with very good result, and the patient recovered, with free movement of the affected knee. The diagnosis of diseased meniscus in the knee seems to be attended with some difficulty. In Professor Kocher's cases, the most marked swelling and tenderness were by no means circumscribed in correspondence with the margin of the affected cartilage. Before incision into the joint, the internal condyle of the femur in one case, and the head of the tibia in a second case, were thought to be the main seats of the disease. The two cases in which a meniscus was removed prove, it is stated, that the removal of one of these structures impairs so slightly the functions of the knee, that the patient is subsequently able to extend his leg forcibly and to bend it at a right angle to the thigh. A fourth case is reported, of thickening of the external meniscus of the left knee in a lad aged fifteen, through chronic inflammation of the joint. This enlarged meniscus presented complete extension, interfered with flexion, and caused a loud crepitus. Excision of this structure was followed, after healing by primary intention, by very good functional results. This case proves that the external meniscus may be removed without any consequent impairment of the functions of the knee-joint. In this, as in the cases of removal of the internal meniscus, the leg could not be carried beyond the ordinary degree of extension, and so the cases have some physiological interest by showing that the menisci do not act as checks in extreme extension of the lower limb. In concluding this paper, Professor Kocher reports a case of advanced disease of the knee, in which recovery with a movable limb followed arthrotomy and extension of the diseased and ulcerated portions of articular cartilage.—*London Med. Record*, Jan. 15, 1882.

Excision of the Tarsal Arch.

Excision of the tarsal arch has been now so often performed for obstinate cases of club-foot that some material for forming a just appreciation of its value exists, and we regret that the President of the Clinical Society did not see his way to adopt Mr. Marsh's proposal for the appointment of a Committee of that Society to investigate the cases and report upon the procedure. The questions that arise are these: Are there cases of club-foot in which the usual treatment by manipulation fails? If so, is excision of the tarsal arch the best means of dealing with them? Can this operation be wisely substituted for the milder treatment in other simpler cases? As Mr. Hayward insisted at the Clinical Society, there are very few, if any, cases *in children* in which tenotomy and judicious and long-continued after-treatment will not accomplish cure; and we hope to see this operation reserved entirely for adults in whom the deformity of the bones and other changes have rendered other methods of treatment useless. In patients of the poorer classes, however, there is another consideration to be weighed—that is, time. A successful excision of the arch effects a cure in a few months, while an obstinate case in a child, ten years of age, say, may require as many years of skilful treatment by other means; and when the effect of the treatment is such that a cripple becomes able to compete successfully with his fellows in almost all kinds of labour, the question of time is of serious moment. But in suitable cases it is open to doubt whether the results of this operation are superior to those of Chopart's amputation, which is its alternative, while it would seem that its dangers are greater. Mr. Davy has lost by death one out of seventeen operations, and König has lost one out of three, both patients dying from septicæmia. The danger, then, of excision of the tarsal arch ought effectually to prevent its being substituted for the more general treatment of club-foot in simple cases, even although it cures in a shorter time; and it certainly has not yet been demonstrated that its results are superior to those of amputation, which is safer. It is eminently a case in which a judicial investigation might be expected to do good.—*Lancet*, December 24, 1881.

Tripier's Amputation of the Foot.

The results of Chopart's amputation through the transverse tarsal articulation are often somewhat disappointing. The caries for which the operation is performed may recur in the os calcis and astragalus, or more often the stump becomes everted and depressed anteriorly, so that the cicatrix is exposed to pressure and friction, and as a result ulcerates. Division of the tendo Achillis has been found ineffectual to prevent this displacement of the foot, because it is a purely mechanical effect, depending upon the fact that normally the os calcis is placed obliquely, forming the posterior extremity of the longitudinal arch of the foot, touching the ground only at the posterior extremity. When the anterior part of the arch is removed, as in Chopart's amputation, the front of the os calcis is depressed and the weight of the body tends to push the astragalus down and forwards, and the shape of the os calcis leads to its eversion. A careful selection of cases, and using a boot specially designed to correct this tendency to displacement, may prevent these ill results. But M. Tripier, of Lyons, has designed a modification of the operation which he hopes will remove all danger of them. Instead of two flaps he uses the oval method of amputation. Starting from the outer side of the tendo Achillis, and carrying the incision forward below the outer malleolus, he encircles the foot opposite the tarso-metatarsal joint. He reflects the soft structures from the bones in the usual manner until able to disarticulate the os cuboides and scaphoid. He then detaches the periosteum from the under and back surfaces of the os calcis as high as the sustentaculum tali, and saws across that bone at that level, making the plane of the sawn surface at right angles to the vertical axis of the leg. The posterior tibial nerve is to be cut as high up as possible, and the wound treated in the usual way. By this means the surgeon is able to examine the cancellous structure of the os calcis, and can detect any latent foci of disease if such exist. The sawn surface of the os calcis being horizontal, it supports the weight of the body without tilting, and on a good broad surface. The soft parts are divided further back, shorter flaps being required than in Chopart's original operation, and it is thus sometimes practicable in some cases of injury in which Chopart's would not be. Mr. P. J. Hayes, of Dublin, has already practised this operation on two patients, and speaks highly of the results. His paper on them, in the *Dublin Journal of the Medical Sciences* for December, is illustrated with plates showing the line of incision, the line of section of the os calcis, the stump left, and the special instrument used by M. Tripier to peel off the periosteum.—*Lancet*, Jan. 21, 1882.

Fractures of the Patella.

In an interesting review of the subject of operative interference in fractures of the patella with separation, by M. POINSOT, the following is a *résumé* of his conclusions:—

1st. Puncture of the joint should be practised in all cases where there is much effusion into the articular cavity; it should be immediate, and it is not necessary to follow it by drainage.

2d. After the puncture, and in cases where the ordinary apparatus are insufficient to maintain coaptation of the fragments, suture of the divided patella may be practised, as recommended by Kocher.

3d. In all cases the apparatus should be examined very frequently for the first few days until the articular swelling has subsided.

4th. For several months after the union of the fracture the limb should be provided with an apparatus limiting flexion.

5th. The opening of the articulation with osseous suture is suited to cases in which puncture is not sufficient to remove the articular exudation.

6th. It is necessary also in pseudarthroses and in cases where an excess of callus interferes with the motion of the joint.—*Revue de Chirg.*, Jan. 1882.

Successful Reduction, after Four Months' Malposition, of a Dislocated Third Cervical Vertebra.

Dr. LANDON CARTER GRAY reports the above remarkable case occurring in a boy aged 15, in consequence of a fall on the head in a vain attempt to turn a somersault. For thirteen weeks after the dislocation there was none other than a difficulty in deglutition. Then the phenomena came fast and many. First, a vesical paresis; next, a numbness of the left upper extremity; then a numbness of the right leg; then a motor paralysis of both upper and lower extremities; and finally, when he came under treatment, there were found—though the relative dates of appearance could not be ascertained—a paresis of the left face, tactile anæsthesia of the left upper and lower extremities, an occasional tremor, exaggerated tendon-reflex (although there had been no hasty micturition), and contractures of certain muscles of the neck and shoulders.

Over the region of the third cervical vertebra, there was on the back of the neck a projection about as large as a pigeon's egg. Pressure upon it produced some pain around the point of pressure, but none was felt at the front or side of the neck. The spinous process of the third cervical vertebra was deviated markedly to the right. Inserting the finger into the mouth, horizontally backward on a level with the upper surface of the tongue, a distinct depression could be felt in the posterior pharyngeal wall, corresponding to the third cervical vertebra. In order to make reduction, the boy was laid flat on his back on the table, and etherized until all his muscles were well relaxed. Supporting the head by one hand upon the occiput and the other upon the brow, both hands being covered by those of an assistant, and counter-extension being firmly maintained, extension was made steadily upward to what was deemed a proper degree, and then the head slowly and cautiously rotated from left to right. It was necessary to make this rotation three several times before the bone went into place, each rotation, however, effecting evident improvement, although no tendinous snap was heard at any time. But go into place it did, and without the manifestation of any dangerous symptom.

All the symptoms immediately disappeared, and although they returned somewhat after a second reluxation following violent motion, a second reduction caused a permanent cure.—*Annals of Anat. and Surg.*, Feb. 1882.

OPHTHALMOLOGY AND OTOLOGY.

Examination of the Eyes of New-Born Children.

According to the investigations of Jajer, the majority of new-born children, 78 per cent., are myopic, while Ely places the percentage at 18, and Horstmann only found myopia in 8 per cent. From the examination of six hundred eyes under atropine in children younger than eight days old Königstein (*Wiener. Med. Jahrb.* i. s. 70, 1881) did not find a single case of myopia, only a few emmetropic eyes, and very many with hypermetrophia over $\frac{1}{12}$, the majority ranging from $\frac{1}{16}$ to $\frac{1}{20}$.

In 40 eyes of infants, Dr. Horstmann found 28 cases of hypermetropia, 8 of emmetropia and only 4 cases of myopia. The iris, as is generally believed, he found to be generally of a bluish-gray colour; he found, however, shades of light bluish-gray to brown, and in some instances the iris was dark brown. He found the remains of the papillary membrane in 21 instances out of 281 children.

The difference in the breadth and appearance of the retinal arteries and veins is not so marked in infants as in adults. In 10 per cent. of the cases examined by Königstein, he found extravasations of blood in the retina which were reabsorbed in a few days.—*Centralb. f. d. Med. Wissen.*, Dec. 10, 1881.

Sulphide of Calcium in Strumous Ophthalmia.

Dr. Snell states that the sulphide of calcium will be found particularly serviceable in those cases of children with manifest strumous habit, enlarged cervical glands, swollen face, the eyelids tightly closed, photophobia, and where, on opening the eyes, a gush of hot tears is emitted, and examination of the ocular surface discloses one or more phlyctenules on the cornea, or it may be merely increased vascularity of conjunctiva. These cases treated by the ordinary constitutional and local remedies are often tedious, but with the sulphide of calcium, coupled with the usual applications to the eyes, such as atropine and warm fomentations of poppy, or what not, frequently quickly yield a happy result. In other cases also of phlyctenular conjunctivitis or keratitis, and not alone in children, the good effects of this medicine are conspicuous. Of course, like all other drugs, it will be hardly likely to be suitable for, or to benefit, all cases, but he has now employed it with good results so frequently that he is quite satisfied as to its being a useful remedy. After little or no benefit with steel in its various forms, and cod-liver oil, the rapid recovery often after the substitution of the sulphide has been astonishing. The mode of administration is generally in the form of a powder, and from gr. $\frac{1}{10}$ to gr. $\frac{1}{4}$ of the sulphide, with a few grains of sugar of milk, are given about three times daily. In this way children take it readily.—*Practitioner*, Jan. 1882.

Treatment of the Pseudo-Membranous Conjunctivitis with Local Applications of Quinine.

Mr. JOHN TWEEDY states that since the publication of his first paper on this subject in the *Lancet*, 1880, vol. i. pp. 125 and 282, he has treated four other cases of diphtheritic conjunctivitis in the same manner, and although the cornea remained wholly intact in only one of these, they all recovered with useful sight, and with, at worst, but slight nebulæ. To the quinine he ascribes the credit of saving the cornea in these cases from total destruction. Three of the four cases occurred in men and one in a woman. Two began as purulent conjunctivitis of gonorrhœal origin, and two were pseudo-membranous from the first. The former, a man and a woman, were admitted with advanced purulent conjunctivitis of the right eye, the left being free. In both instances, within a few days of admission, and while the inflammation of the right conjunctiva was subsiding, the *left*, in spite of protection by Buller's shield, became the seat of adherent pseudo-membranes. In neither did much pseudo-membrane appear on the right conjunctiva.

As soon as the nature of the disease was definitely recognized, all other treatment, if any, was stopped, and quinine lotion, containing four grains of sulphate of quinine, with a minim of dilute sulphuric acid to an ounce of water, was alone employed. As far as possible the diseased surfaces were kept constantly bathed with the solution, the conjunctival sac being converted, as it were, into a trough holding the quinine lotion. A bowl of the solution was also placed within reach of the patient, who washed the eye frequently and kept a well-soaked compress constantly applied in the intervals. Besides these applications by the patient and by the nurse, the house-surgeon visited each case three or four times a day. On these occasions the lids were everted and the conjunctival sac thoroughly cleansed with the quinine lotion. The superficial disintegrated portions of the exudations were then gently removed with wet lint, care being taken not to aggravate the inflammation by rough handling or by rude attempts to tear off the pseudo-membrane. Usually, the quinine lotion was iced. In two cases the local application of powdered sulphate of quinine was tried at first, or sulphate of quinine rubbed up with an equal part of calomel ; but, in addition to causing great pain, the powder did not appear to be so beneficial as the quinine in solution, and was therefore soon abandoned.

He would also emphasize the fundamental difference between the pellicular membrane of ordinary purulent ophthalmia and the parenchymatous pseudomembrane of diphtheritic conjunctivitis. Extended experience has satisfied him that the two forms are essentially distinct and separate in their pathological as well as in their clinical relations. The pellicular form is amenable to simple treatment, and need not give much anxiety, whereas the pseudo-membranous is terrible in its ravages and appalling in its possibilities. Not a little harm may be done by confounding these two diseases. An application of nitrate of silver to the pseudo-membranes of diphtheritic ophthalmia increases the damage, whereas judicious applications speedily cure the membranous variety of purulent ophthalmia. The difference is appreciable from the earliest to the latest stages. Even when the pseudo-membrane is thin and detachable, its removal does not expose a swollen and vascular mucosa, but a smooth, pale surface often of a dull leaden hue. Later on the difference is still more marked; the membranous form only affects the epithelial layers of the mucous membrane, whereas the pseudo-membranes always invade the deeper texture, and heal by cicatrization. In all the cases he has diagnosed as diphtheritic conjunctivitis cicatrization was always pronounced.—*Lancet*, Jan. 7, 1882.

The Extraction of Chips of Iron or Steel from the Interior of the Eye.

Dr. J. Hirschberg has been experimenting with the method of extracting metallic chips from the eye with the electro-magnet, of which he describes the form he has found most suitable. He states that when the foreign body is in the superficial layers of the cornea, or in the aqueous chamber, the magnet is both unsuitable and unnecessary, although it is advisable to have the instrument within reach if it should be needed; with a powerful magnet chips may be withdrawn from the posterior capsule of the lens, and when they are in the vitreous body, the use of the magnet then is especially recommended. In the latter case the operation (of which several cases are reported) is quite safe if the sclerotical section is performed in a meridional direction and covered with a conjunctival flap, and if it is not necessary to employ forceps or spoon.—*Arch. of Ophthalmology*, December, 1881.

Acute Glaucoma cured by Eserine.

At the meeting of the Ophthalmological Society of Great Britain, Mr. Nettleship and Dr. Buzzard reported each a case of acute glaucoma cured by eserine. Mr. Nettleship read the notes of a case, which had been under the care of Mr. R. J. Pye-Smith (of Sheffield). The patient, a lady aged 70, had been severely shaken by a fall down-stairs. On the fifth day after the accident, the left eye became acutely glaucomatous (T + 2), the cornea steamy, the pupil dilated, vision was reduced to counting fingers, and coloured rings were observed around a candle. The use of eserine disks entirely relieved the symptoms within twelve hours. For a year after this, very slight and transient relapses occurred at intervals of not more than a month. The symptoms, when they recurred, were always removed by the use of the eserine disks. Latterly, the relapses had become less and less frequent, and none had occurred for the last three months. The eye at the present time (two years after the first attack) is normal, and brilliant type (Jäger 1) can be read with the reading glasses which have been in use for several years.

Dr. Buzzard relates the case of a lady aged 64, to whom he was called on account of severe neuralgia in the region of the supra-orbital nerves, which had been treated by gelseminum for some time. Dr. Buzzard found all the typical symptoms of acute glaucoma. Iridectomy was advised; but, before resorting to that operation, eserine disks were tried, on the advice of Mr. Lawson. Two or three disks a day were used, and an immediate improvement was noticed; and, in six weeks, the patient had completely recovered; she still remains free from disease.

The President observed that both cases were of great value, especially the latter; for in the former, there might be some suspicion that the glaucoma was due to the injury; in the second case, there was no history of injury, and by so much the case was more satisfactory as evidence that acute glaucoma could be cured by eserine.

Dr. FITZGERALD (of Dublin) had met with one case where the symptoms of acute glaucoma were immediately relieved by eserine. In chronic glaucoma, also, eserine had sometimes yielded satisfactory results in his hands.

Dr. BRAIYEL considered eserine especially suitable for cases like those cited, viz., recent acute or intermittent glaucoma. He attributed these forms of the disease to an excessive secretion, perhaps temporary, into the vitreous chamber, the ways of escape of fluid from the eye not being structurally changed. The drug gave relief by causing contraction of the intra-ocular muscular fibres sufficiently strong to render tense and to open out the meshwork in the neighbourhood of the iris angle. In this way, the retardation caused temporarily there by the increased pressure is done away with, and a sufficient flow re-established. The curative action of the drug was not due to a removal of the iris periphery from the entrance of Fontana's spaces, for it is only in cases of longer standing that the iris is found occupying such a position. Eserine would naturally fail where, as in senile chronic glaucoma, the muscular fibres of the ciliary body and iris were atrophic, and the meshwork at the periphery of the anterior chamber indurated and contracted.

Mr. ANDERSON CRITCHETT had recently had a case of chronic glaucoma in which the persistent use of eserine for some months had entirely failed. He thought too much trust ought not to be placed in eserine.

Dr. ANDREW (Shrewsbury) thought that eserine was of value where sympathetic ophthalmia was commencing. He had found that, in those cases where it was doubtful whether the excision of the diseased eye might be too late to save the other eye, eserine seemed to reduce the tension of the eye sympathetically affected, and gave time for the selection of a favourable moment for excision of the diseased eye.

Mr. PRIESTLEY SMITH had seen two cases in which he thought eserine had been of use in acute glaucoma. He believed that eserine and atropine had no effect on the tension of the healthy eye. Where the angle of the anterior chamber was compressed, eserine reduced the tension. Where the lens came to lie in front of the iris, so that the relations of the anterior chamber were altered, then eserine had an opposite effect, and might even set up an attack of glaucoma.

Mr. McHARDY had found that, in some instances, eserine would, on two or three occasions during the course of a case of recurrent high tension, lead to a reduction of tension, but would on a subsequent occasion, in the same case, fail. He therefore questioned whether it was safe to allow a patient, who was greatly benefited by eserine, to pass beyond the reach of surgical superintendence. In two cases he had seen, the patients had been led by their faith in eserine to put off the operation of iridectomy until too late.

Mr. G. CRITCHETT thought that, though eserine often gave temporary relief, yet frequently the glaucomatous condition returned. He believed that a patient who had had an iridectomy done was in a safer condition than one who trusted to the possible benefit to be derived from eserine.—*Brit. Med. Journ.*, December 17, 1881.

Massage in Diseases of the Eye.

PAGENSTECHER (*Arch. of Ophth.*, Dec. 1881), called attention to this mode of treatment in the *Centralblatt für Augenheilkunde* for December, 1878; he now publishes his further experience of it, which has been very favourable.

Massage consists in rubbing the surface of the eye with the eyelid in a particular manner. The thumb or forefinger is pressed lightly on the edge of the upper or lower lid, and the lid is rubbed as rapidly as possible over the eye usually in a radiating direction, *i. e.*, from the centre of the cornea towards its margin. The rubbing must be both light and rapid. The massage of any one particular portion of the ciliary region, which is generally all that is required, occupies a minute or two; it is usually practised once a day, but sometimes twice if well borne. Pagenstecher at present always uses the yellow precipitate ointment, made with vaseline, simultaneously with the mechanical treatment; in addition to its specific therapeutical effects, it does good by lubricating the surfaces.

The conditions to which massage is applicable are certain affections of the cornea, conjunctiva, sclera, and ciliary body, viz.:—

1. Opacities of the cornea resulting from pannous keratitis, scrofulous superficial keratitis, and even parenchymatous keratitis. When, after corneal vascularity has subsided, such opacities remain stationary, massage re-excites a moderate vascularity, and promotes removal of the opacity. The irritation produced must be of moderate degree; it must wholly disappear in half an hour.

2. Chronic pustular conjunctivitis, especially in old people. Forms of chronic conjunctivitis in which there is a hypertrophic thickening of the membrane close to the margin of the cornea, occurring either as an elevated yellowish wall surrounding the cornea, or as one or more thick vascular papules towards which large veins course from the conjunctiva. A form of conjunctivitis, chiefly caused by external irritation, in which the inflammation occurs in a triangle, with its base at the outer, rarely at the inner, margin of the cornea, the membrane being swollen and of a grayish-yellow tinge, and the conjunctival and subconjunctival vessels swollen.

3. Forms of scleritis or episcleritis in which fixed nodules appear in or on the sclera, often accompanied with severe ciliary neuralgia. Constitutional treatment is required in addition to the massage, and the latter is not employed if there be iritis; it appears to hasten the absorption of the nodule. Chronic episcleral inflammation, without iritis, leading after long periods to alterations in the tissue of the sclera.

4. Circumscribed affections of the ciliary body. In the one case thus treated a localized congestion of long standing in the upper part of the ciliary region, associated with extreme sensitiveness and pain after efforts of accommodation, was cured by massage.

Speaking generally, Pagenstecher recommends this treatment in chronic inflammatory processes in the anterior segment of the eye. It is contraindicated when it is found to cause permanent or excessive injection, and especially if there be photophobia and lachrymation. It is not to be employed in presence of iritis. —*Ophth. Review*, Feb. 1882.

Rules for the use of Eserine and Atropia in Glaucoma.

Mr. Priestley Smith gives the following rules to govern the use of these drugs in primary and secondary glaucoma:—

1. Eserine is not to be regarded as a specific remedy for increased tension in general; but as a means of combating the particular displacement of the iris, which, in a large class of cases, is the immediate cause of the excess of tension.

2. Atropine is to be regarded as inadmissible only in those cases in which dilatation of the pupil is likely to intensify the effect of the above-named displacement of the iris.

3. *Primary Glaucoma.*—In primary glaucoma, and particularly in its early stages, atropine and all other dilators of the pupil are to be studiously avoided.

4. Every case of primary glaucoma should be treated in the first instance tentatively with eserine; the eye should be re-examined within 24 hours, and, if the case be acute and severe, within a much shorter time, in order that operation may be at once undertaken if the tension remain unrelieved.

5. When eserine produces a full contraction of the pupil, it usually produces a reduction of tension and an improvement of vision, and, in exceptional cases, it effects a cure.

6. Eserine is usually to be regarded rather as a means of giving temporary relief and of placing the eye in a condition favourable for operation than as a means of cure. Even when its beneficial action is most complete, the glaucoma is likely to recur and to become confirmed unless arrested by a timely iridectomy.

7. It is chiefly in very recent subacute or acute attacks that benefit from eserine is to be hoped for.

8. In simple chronic glaucoma contraction of the pupil by eserine may be associated with some reduction of tension, but it is unlikely that the benefit will be great or lasting. If operation be declined, or be deemed inexpedient, the pupil should be kept permanently contracted by eserine, so far as this can be done without causing irritation, in order, if possible, to retard the progress of the disease.

9. The strength of the preparation employed, and the frequency of its application, should, in all cases, be the minimum which is sufficient to contract the pupil and to keep it contracted. A solution stronger than 2 grains to the ounce of water is probably never desirable, and in many cases a much weaker solution is to be preferred. The gelatine disks of Savory & Moore are a very convenient and trustworthy form of application.

10. When eserine proves powerless to contract the pupil, it will not reduce the tension or do good in any way, but, on the contrary, is likely to do harm by promoting hyperæmia, and should not be used further.

11. The period most favourable for operation is that during which the pupil still responds to eserine, but, in recent cases especially, iridectomy may still prove effectual after contractility of the pupil is lost.

12. As a preliminary and as a sequel to sclerotomy, contraction of the pupil by eserine is almost a *sine qua non.* As a preliminary to irridectomy it is advantageous in so far as it reduces the tension of the eye, but it has the disadvantage of increasing the hemorrhage from the iris. After iridectomy, while the anterior chamber is still empty or only partially reformed, eserine is apt to promote the formation of posterior synechia, and has been known to induce a fresh glaucomatous attack;[1] atropine, on the other hand, is certainly sometimes beneficial. Further evidence as to this point is wanted.

13. In those cases in which a condition closely resembling primary glaucoma is lighted up by an *intra-ocular hemorrhage*, eserine must be used with great caution. It sometimes relieves, but it has been known to excite fresh hemorrhage.

14. *Secondary Glaucoma.*—In secondary glaucoma associated with *posterior or anterior synechia*, eserine is likely to do harm rather than good; atropine may be useful in subduing inflammation, and is likely, if it influence the tension at all, to influence it beneficially. The same rule holds good for serous iritis, and, probably, for some other ill-defined inflammatory states in which the anterior chamber is deep rather than shallow.

15. Glaucoma following *needle operations on the lens* might possibly, in the absence of iritis, be relieved, for the moment, by eserine; but eserine is contraindicated by the danger of setting up iritis; the speedy removal of the swollen lens is the rational treatment.

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[1] Pflueger.—Augenklinik der Universität Bern. Bericht über das Jahr 1880, p. 44.

16. Glaucoma due to the presence of the *lens in the anterior chamber* is likely to be aggravated by eserine; if, when there is no excess of tension, eserine be employed in order to facilitate the removal of the dislocated lens by operation, it should be applied only a short time before the operation is performed, lest it should induce a glaucomatous attack in the interval.—*Ophthalmic Review*, March, 1882.

Treatment of Otorrhœa.

Professor Gruber (*Allgem. Wiener Med. Zeitung*, 1880, Nos. 28, 29, 30) discusses three methods now in vogue, viz.: 1. Schwartze's treatment with strong solutions of nitrate of silver; 2. The method of treatment with spiritus vini rectificatus simus; and 3. Bezold's powdered boracic acid treatment; all or which the author has used with great benefit. The first plan of treatment he finds best in cases of extensive perforation, in which the tympanic mucous membrane is largely exposed. To avoid cauterizing the Eustachian tube and throat unnecessarily, he introduces the caustic solution by means of a syringe, whilst the patient's head is resting on the opposite side of his occiput. The nitrate of silver is then neutralized by the injection of a warm solution of common salt. The strength of the caustic solution employed is 15 to 40 grains to the ounce. The effect of this treatment is usually rapid; and if four or five cauterizations fail of their effect, the author discontinues them. He has compared the action of boracic acid and of borax. He finds the latter, in concentrated solution, more effectual in otorrhœa as a symptom of "chronic middle-ear catarrh accompanied by destruction of the drum-head," than the powdered boracic acid; in chronic suppurative inflammation of the middle ear, on the other hand, in which there is destruction of the membrane when the patient comes under treatment, the boracic acid often renders very good service, but it must be continued for several weeks after the discharge has ceased, or relapse may occur. In cases of this description in which there are no polypoid growths, the author almost always employs first the boracic acid treatment, and only in the event of this failing does he have recourse to other methods.—*London Med. Record*, Dec. 1881.

MIDWIFERY AND GYNÆCOLOGY.

Experimental Production of Abdominal Pregnancy.

Dr. Leopold, of Leipzig, has recently carried out some experiments of the above kind, the results of which we think it well to summarize. The most obvious method of investigating the process of abdominal gestation would of course be to open the abdomen of a pregnant animal, cut into the uterus, and turn the embryo out into the peritoneal cavity. But this has the disadvantage that the operation on the uterus would be attended with some degree of shock, and probably ulterior ill consequences, which would interfere with a favourable result from the experiment. Dr. Leopold therefore proceeded thus: he opened the abdomen and uterus of a pregnant animal, and then the abdomen of one not pregnant, and transferred in some experiments the embryo only, in others the embryo and its membranes and placenta, from the uterus of one animal to the abdominal cavity of the other. Then he closed the wound, and observed the result. Rabbits were the animals used. Embryos, two and a half, five, six, and eight centimetres long, were transplanted—those of the last-mentioned dimension being as near maturity as could be obtained. We cannot quote the experiments in detail (an account of them is given in the *Archiv für Gynäkologie*); the lessons which they teach are, of course, the important part. As to result, the experiments fall into two groups—one in which peritonitis followed, from which the animals soon died; and the other in which they survived, and the transplanted embryo became encapsuled. In the cases in which peritonitis was excited, the fœtus was found to have undergone rapid disintegration. Of the very smallest embryo transplanted, no trace was found when the animal died on the second day. Of those which were older, only some nodules of bone and cartilage remained, the soft parts having been absorbed through the agency of invading leucocytes. In the cases in which no peritonitis was excited, the animals were killed at periods varying from three to seventy days after the operation. The changes found, speaking generally, were that the fœtus had become encapsuled; that the very early embryos were completely absorbed, not a trace of them being left. In the older embryos, the soft parts were more or less completely absorbed, the skeleton was left, and there was *growth* of bone and cartilage. In the latter result these experiments may usefully be compared with others published by the same author in Virchow's *Archiv*, in which he showed that bits of cartilage from young animals, when transplanted into the anterior chamber of the eye, were absorbed, while bits of cartilage from fœtuses *grew*, and formed tumours. The chief practical conclusion which Dr. Leopold draws from his experiments is, that they make it seem probable that cases of extra-uterine gestation, ending in rupture of the sac and escape of the fœtus into the abdominal cavity, may be much commoner than is thought, the symptoms being those of a pelvic hæmatocele, and the case ending in the death of the fœtus and its absorption through the action of leucocytes.—*Med. Times and Gaz.*, Jan. 14, 1882.

Treatment of Spasmodic Dysmenorrhœa and Sterility by Dilatation of the Cervical Canal with Graduated Metallic Bougies.

At a recent meeting of the Obstetrical Society of London Dr. GODSON gave a history of the introduction of the method, more than fifty years ago, by Dr. Mackintosh of Edinburgh, and of the various phases through which it had passed, it having fallen into disfavour, until recently its claims had been advocated by Dr. Matthews Duncan. A statement was made of all the cases of dysmenorrhœa associated with sterility which the author had treated, pregnancy having followed in five, or one-half of them. The dysmenorrhœa was of that kind known as spasmodic or obstructive, characterized by severe colicky pains in the hypogastric and sacral regions, either before the menstrual flow or coincident with it. The author preferred to drop the title obstructive, as he knew no evidence to prove that there was a want of patency of the cervical canal; and Dr. Duncan had passed a probe into the uterus at the height of the pain without meeting with obstruction. He believed that the spasm of the uterine muscular tissue was of itself sufficient to give rise to the severe pain, without any obstruction. Case 1, aged 32, married four years, applied on account of sterility; its association with dysmenorrhœa was then elicited. On two occasions, at an interval of two months, several dilators were passed, the highest No. 14. The dysmenorrhœa was relieved after the first menstruation; pregnancy occurred three months after the second. Case 2, aged 29, married three years, sterile, applied for severe dysmenorrhœa. Two dilators only (Nos. 7 and 8) were passed, producing very severe pain. The next period took place without pain, and was followed by pregnancy. Case 3, aged 22, married two years, complained of spasmodic dysmenorrhœa. Dilators 7 and 8 were passed; three periods comparatively free from pain followed, then pregnancy.

Case 4, aged 24, sterile, married two years and a half, applied for severe dysmenorrhœa, aggravated by marriage. Bougies Nos. 7 and 8 were passed only a few days before a period, which, when it occurred, was in no respect freer from pain. Two periods followed with hardly any pain, and then pregnancy. Case 5, aged 25, married three years and a half, sterile, applied for dysmenorrhœa. Dilators 6, 7, 8, 10, and 12 were passed. One period occurred without pain, and then pregnancy. The author concluded: 1. That the method was simpler and safer than any other proposed; 2. That the dilatation might be performed with safety at the house of the consultant; 3. That a very small amount of dilatation was necessary; 4. That the operation should be performed within a week or ten days after a period; 5. That it should be done, not on successive days, as hitherto recommended, but all at once; that the first bougie should be a small one; and that there should not be sufficient difference between the size of successive bougies to cause a splitting of the mucous membrane; 6. That pregnancy appeared to occur on account of the dilatation having cured the conditions on which the dysmenorrhœa depended. In none of his cases was there either stenosis or constriction of the canal by acute flexion. The theory, therefore, of permanent constriction being discarded, in what did the impediment lie? Was it a spasmodic constriction causing ejectment of the semen? Of the five cases in which the sterility was not cured, one—a hospital case—was lost sight of; one was relieved of her dysmenorrhœa for a time; but, it having returned again as badly as ever, was treated by an intrauterine stem, and cured. Of the remaining three, in all was the dysmenorrhœa relieved; but pregnancy had not yet resulted.

Dr. Graily Hewitt had found that, in the large majority of cases, relief of dysmenorrhœa was obtained by simply maintaining the canal of the uterus in a state of straightness. In cases where the uterus was unduly soft and pliable, dilatation was not necessary; but in long-standing cases, dilatation was a great assistance in the treatment. He had used a two-bladed dilator acting on the principle of a glove-stretcher. This instrument produced the same kind of effect as the dilators now exhibited. He had cured many cases of sterility, some of ten, or even thirteen years' standing, by the above treatment. In regard to diagnosis, cases of very soft flexed uterus were sometimes overlooked, owing to the apparently easy passage of the sound.

Dr. Heywood Smith said that the author had referred to the President's experiments on the flow of fluid through bent tubes; but the substances used in such experiments had no analogy to the uterine canal, which was of varying thickness, and of such a substance as rendered its canal obnoxious to impressions upon its inner surface from any flexion. His father, when assistant-lecturer to Dr. Rigby at St. Bartholomew's in 1836, had used Mackintosh's bougies for the treatment of dysmenorrhœa and sterility; and, since the foundation of the Hospital for Women that procedure had been practised with the greatest possible advantage. He thought it best to have the sounds straight in their uterine portion, not curved, like the dilators shown.

Dr. Carter had obtained exceedingly satisfactory results from the use of graduated sounds, both as regards dysmenorrhœa, and sterility when it accompanied it. When the flabby condition of uterus mentioned by Dr. Hewitt existed, he found that dilatation alone was not sufficient; and in such cases he had employed an intra-uterine stem with the best results. He had found it better not to pass the sounds within four or five days.

Dr. Routh said that he did not see what advantage the method had over that of dilatation, first by tangle-tents, and afterwards the employment of an intra-uterine pessary. A plan analogous to Dr. Duncan's had been in use in early days at the Samaritan Hospital; but it had been proved that it was not so free from danger as stated to-night, and it had been abandoned. When such men as Sir James Simpson and Dr. Marion Sims had discarded the dilators because of their danger, clearly they should not be lightly resumed. The effect was transitory, unless pregnancy occurred very soon after; and the pain induced was sometimes very great. In the case of flexion, it was often difficult to pass even a bent sound; and the use of a straight dilator in such cases would be liable to set up inflammation. With either Dr. Wynn Williams's pessary or his own, a uterus was not only kept dilated, but it reduced the uterus. The comfort of such instruments was such, that women did not like to part with them; but he always removed them after eight or twelve months; and pregnancy frequently followed.—*British Medical Journal*, Jan. 7, 1882.

Dr. RODGERS had twenty-five years ago commenced the use of dilators, at the recommendation of the late Sir James Simpson. In married women pregnancy often followed; but the results were not so satisfactory in the unmarried, who often relapsed into their former condition. Eventually he ceased to have confidence in their use, and he believed that they had been universally discontinued in London, until the last few years. He had also given up the use of incisions, one of his patients having died after that operation. Eventually he turned his attention to the cure of dysmenorrhœa by the use of Dr. Wynn Williams's intra-uterine stem and shield; and in only one case had serious mischief arisen. In private practice, however, he preferred one of Meadows' or Routh's stems of vulcanite, as India-rubber soon decomposed. Since hearing the paper he had tried a No. 7 and 8 dilator upon one patient, but found that the latter gave extreme pain. Dilatation by sea-tangle was well borne.

Dr. BRAXTON HICKS confessed to a difficulty he had always felt in distinguishing the purely spasmodic dysmenorrhœa, to which the author professed to confine his paper. We might be able during the menstrual intervals to pass a sound readily up the fundus, and yet the menses might be obstructed; for instance, from a hemorrhagic coagulum or tumidity of the mucous membrane. When we looked to the remedy employed by the author, we found that it was essentially dilatation by bougies graduated in size. Hence we might fairly conclude that the cases where these were of use were, more or less, at the menstrual period cases of obstruction, unless it were argued that the mere passage of the metal tended to harden the mucous surface and to render the uterus less susceptible and spasmodic. If, then, the cases were in a measure those of obstruction, then they were out of the discussion, which was limited to those of pure spasm.

Dr. SAVAGE said that the instrumentalists contended that their inventions cured in some cases, relieved in most, and never did harm; whereas there was abundant evidence that they never cured, relieved only so long as they were used, and too often did much harm, even to compromising life. An eminent provincial surgeon had lately brought to the notice of the profession fourteen morbid specimens of the uterine appendages, some of the tubes containing half a pint of matter. It was said that these unfortunate subjects had been the round of the profession, and had been subjected to all sorts of instrumental treatment. Was it not clear that the original disease, if not produced by instrumentation, had been greatly aggravated by it? He agreed with Dr. Hicks and Dr. Herman that every sort of uterine deviation and contraction was met with without suffering, and the converse. He thought the diagnosis of deviations by instruments untrustworthy, for the deviation supposed to be diagnosed was actually produced by the instrument. He deprecated the fast-growing tendency to interfere surgically with complaints referable to the uterine system.

Dr. PRIESTLEY thought that one of the disadvantages of discussions like the present was that those of limited experience were apt to conclude that all cases of dysmenorrhœa required local treatment. The theory that dysmenorrhœa was always obstructive was not borne out by facts, for severe pain in menstruation often occurred after the genital canal had been fully expanded by parturition; though it was true that, in the majority of cases, parturition cured previously existing dysmenorrhœa. There might be great suffering at what corresponded to menstrual periods where there was absolute amenorrhœa, or where the uterus was rudimentary. There was a large class of cases, more especially among unmarried girls, in which local treatment was absolutely unnecessary. He could not agree with the author, however, in dropping the term obstructive dysmenorrhœa, for there were not infrequent instances of genuine organic narrowing, congenital, or acquired as the sequel of inflammation. A correct diagnosis was most important. Where local treatment was considered necessary, he thought in some cases dilating was the proper course, in others division of the cervix was more useful. Where there was a choice he preferred dilatation, considering incision to be much more hazardous.

Dr. GALABIN said that the most remarkable point about the cases was the very large proportion of them in which not only dysmenorrhœa, but sterility seemed to have been cured. What was the mechanism of this cure? He had himself had cases in which, after years of sterile marriage, pregnancy had followed within a month after a single use of metallic bougies or Priestley's dilator. Dr. Barnes had related cures of sterility by moderate incisions of the external os, and similar experience was not uncommon. The only common element in the three modes of treatment seemed to be that all made the access through the cervical canal more free. The natural inference was that a canal, though large enough to let the sound pass easily, might yet practically not give free enough ingress to the semen. *A fortiori* a similar canal might not give perfectly free egress to the product of menstruation, which was not only fluid blood, but contained débris, if not shreds, of mucous membrane, and often clots. Egress of menstrual fluid was not prevented, as ingress of semen appeared to be, because it had the contractile power of the uterus behind it; but this very circumstance was enough to account for spasmodic pain in a sensitive subject. He did not accept the author's theory that the sterility was due to spasm of the uterus ejecting the semen, for the painful spasm only occurred at the menstrual period.

Dr. MURRAY spoke in favour of the intra-uterine stem. The case of dysmenorrhœa and sterility so treated by him had been successful; and he thought the stem pessary much more likely to effect a cure in the so-called spasmodic dysmenorrhœa. He quite agreed with Dr. Hicks's views on this subject, and also with Dr. Priestley, that a great deal too much interference often took place.

Dr. AVELING said that dilatation for the cure of dysmenorrhœa might be effected in four ways: 1, by passive, or what had also been called physiological, dilatation by means of stems; 2, by wedging the canal open by sounds, bougies, or plugs; 3, by direct dilatation instruments or tents being passed into the canal and expanded or allowed to expand; 4, by incision. Each of these methods he thought might be used satisfactorily, but no one should be used to the exclusion of the other.

The President, Dr. MATTHEWS DUNCAN, thought the mechanical obstruction to semen by the cervical passage was regarded as far more important than it really was; and especially he noted the error of regarding the dimensions of the cervical passage as being stable, constant, or permanent. He had no doubt they varied, and almost certainly were enlarged during the orgasm of coitus. Were these conditions as important as represented, and were they stable or constant, impregnation could never occur, for the passage of the inner end of the tube was closed altogether; not a bristle could be passed. This was enough to show that it was wrong to consider the size of passage without further investigation as to changes of the size. Many eminent men doubted the reality of so-called cures of sterility, and he had no doubt that most cases were mere lucky coincidences. He was not convinced of the reality of any cures except in these cases of combined dysmenorrhœa and sterility discussed in Dr. Godson's paper. One evidence in favour of the reality of the cures was that all were done by substantially the same method—namely, dilatation of the cervix. Among the various means of dilatation, he held a well-known opinion in favour of that recommended in the paper just read.

Dr. GODSON, in reply, said that his dilators were not curved any more than an ordinary uterine sound, and not so much as those used by the president. It seemed almost certain that the patient upon whom Dr. Rogers had passed the dilators was suffering from congestive dysmenorrhœa, and was not a fit subject for the treatment. It was most important that a proper diagnosis should be first arrived at, and that dilatation should be only practised where there was absence of congestion, otherwise there was great fear of inflammatory mischief ensuing. His paper treated only of spasmodic dysmenorrhœa *associated with sterility*, and therefore Dr. Priestley's remarks with respect to the treatment of young girls were outside the scope of the paper, but he entirely accorded with them.—*Lancet*, February 11, 1882.

The Elastic Ligature in the Abdominal Extirpation of Uterine Fibroids.

One of the chief difficulties in the extirpation by laparotomy of uterine fibroids has been to find some trustworthy method of securing the stump. The pedicle, being formed of muscular tissue, contracts, so that the clamp or ligature, a few hours after it has been applied, will have become loose. In a recent number of the *Archiv für Gynäkologie* a case is recorded in which the elastic ligature was successfully employed. It occurred in the clinique of Professor Olshausen, and is reported by Dr. E. Schwarz. The tumour, before operation, was supposed to be ovarian; its smoothness, the sense of pseudo-fluctuation which was felt over it, and the facts that it pressed down the uterus (which could thus be palpated per vaginam apparently throughout its whole length) and that a rounded elastic segment of the tumour could be felt behind the uterus, being the features which led to this error. An incision having been made, and the tumour exposed, a trocar was thrust into it, but nothing escaped. The opening was then enlarged with the knife, and a quantity of opaque, reddish-brown, thin fluid, and a mass of decolorized blood-clot as big as two fists (in all, weighing about thirty pounds) was removed. The incision having been prolonged upwards, and thus the bulk of the tumour (which was found to grow from the upper and posterior part of the uterus) got outside of the abdomen, a piece of India-rubber drainage-tube was made fast round its pedicle to control hemorrhage. Then the tumour, the solid part of which weighed twelve pounds and a half, was excised, the pedicle being left of a funnel shape; the arteries visible were separately taken up and tied, and the sides of the hollowed-out pedicle were brought together by superficial and deep sutures. The India-rubber tubing was then taken off; but blood welled up from the pedicle in such quantity as to call for some mode of stopping it which would not involve delay. A piece of India-rubber tubing about the thickness of a goose-quill was therefore put twice round the pedicle and tied. Between the two bands of tubing the stump was transfixed with a long needle, and it was then made fast to the abdominal walls, drainage-tubes were inserted, and antiseptic dressings applied. The part outside the ligature was nearly as big as the fist. The operation lasted one hour and three-quarters. In the evening the dressings were found soaked through, and on removing them, it was discovered that the needle had broken, and the stump dropped into the abdominal cavity. The ends of the elastic ligatures were still outside. As there were no bad symptoms, it was not thought necessary to interfere further. The drainage-tubes were removed on the fourth day. The elastic ligature and the detached part of the pedicle came away on the seventeenth day. The patient did well. Dr. Schwarz suggests some ingenious modifications in the mode of applying the elastic ligature; and Professor Olshausen (who adds some comments) expresses himself as without doubt that the elastic ligature is destined to play a large part in the treatment of cases similar to the one described. We may add that a volume of *Beiträge* recently published to commemorate the jubilee of Professor Credé's occupation of his chair, contains a communication by Dr. Leopold, of Leipzig, bearing on the same subject.—*Med. Times and Gaz.*, Dec. 17, 1881.

Diagnosis of Ovarian Tumours.

Dr. A. Macdonald mentions the following points as assistance in the differential diagnosis of ovarian tumours:—

1. *Pregnancy.*—The possibility of pregnancy, the signs and symptoms of pregnancy, and waiting if in doubt, place the diagnosis beyond possible mistake with a fair measure of care.

2. *Fibroid.*—A large fibroid with solid walls, leading to general enlargement of the uterus, is easily diagnosed. The increased length which the sound enters, the fact that the uterus moves with the sound, the peculiar feel of the uterus, and the nearly constant menorrhagia, suffice to keep the diagnosis correct. It is quite common to hear a bruit in a case of uterine fibroid; only in vascular sarcomata is such audible if the tumour is ovarian. But much greater difficulty is experienced in cases of fibro-cystic tumours connected to the uterus with or without pedicle. In that case we must try to ascertain whether the tumour is connected or disconnected with the uterus. Then the cyst of a fibro-cystic tumour may be tapped, when we expect to find only a thin fluid of great density, with some blood-corpuscles, and possibly some non-striped muscular fibres. But in those cases it is often found that only an exploratory incision can determine the diagnosis with accuracy.

3. *Renal cysts* begin below the false ribs and extend downwards and forwards. They have a line of resonance between them and the liver due to the transverse colon, which is of value as showing they are not of hepatic origin, and when aspirated they contain urea. Usually accompanying such there are urinary symptoms, but not always.

4. *Ascites* exhibits the characters of free motion of fluid in an imperfectly filled cavity. Accordingly, when the patient lies on her back the abdomen is flattened anteriorly, the flanks give a dull note, and there is clearness round and above the umbilicus. With change of the patient's position the areas of resonance alter. Thus if the patient is turned on her left side, the right flank gives a clear note, and *vice versa*. In case of tapping an ascites the thick gelatinous fluid characteristic of ovarian tumour is never obtained.

5. *Hydatid Cyst of the Liver.*—In this case the tumour grows from the liver, distending first the distance between the ensiform cartilage and the umbilicus, the reverse of an ovarian cyst. Again tapping and discovering acephalocysts in the fluid is convincing evidence of the true nature of the tumour.

6. *Hysterical abdominal distension*, commonly known as spurious pregnancy, need deceive no one, as the percussion is uniformly resonant, and the tumour disappears under chloroform.—*Edinburgh Med. Journ.*, Nov. 1881.

Hernia of the Ovary.

At the meeting of the Royal Medical and Chirurgical Society, held Jan. 24, Dr. ROBERT BARNS read a paper on "Hernia of the Ovary," giving an abstract of cases hitherto reported, and relating two cases observed by himself. The first case was admitted by him into St. George's Hospital in 1877. The patient was single, aged forty-one, and had always enjoyed good health. At twenty-four she sustained a rupture in the left groin, and wore a truss; at thirty-eight she observed a second swelling behind the first. The swelling and tenderness of the ovary were observed before and during the menstrual periods. Corresponding sphygmographic observations showed distinct rise of tension preceding the flow and subsiding when the flow set in. The ovary was removed; a description and illustration of it were submitted by Dr. Goodhart. He referred to Dr. Chambers's case in the Obstetrical Transactions in which bodies simulating ovaries turned out to be testicles. He discussed the etiology of hernia of the ovary and uterus, citing Cruveilhier's views, and referred to the frequent complication of anomalies of development of the genital organs in association with hernia of the ovary, also with extra-uterine gestation. He enumerated the varieties of hernia of the ovary; referred to the supposed greater frequency of inguinal hernia, when the ovary is concerned; to the greater frequency of congenital hernia; the complications with intestine and epiploon; the dependence of hernia of the uterus upon pre-existing hernia of the ovary, citing Cruveilhier's theory and the confirmatory conclusions of Puech, Deneux, and Cæsar Hawkins. The author then discussed physiological points, illustrated by the observation of the herniated ovary; how the ovary swells concurrently with increased tension of the vascular system before menstruation; how the round ligaments swell. He described the order in which the phenomena of menstruation occur, arguing that the ovarian nisus is the *primum mobile*, that nervous and vascular tension follow, and lastly, the menstrual flow, resting greatly upon sphygmographic observations. He suggested that the recent practice of oöphorectomy on Battey's principle will supply opportunities for deciding this and other questions, and proposed that sphygmographic observations should be made upon the subjects of this operation. He then discussed the diagnosis and treatment of hernia of the ovary, contending that it furnishes a legitimate motive for Battey's operation *quoad* this affection at least.

Dr. ROUTH said the facts related left little doubt that menstruation starts in the ovary. He mentioned the case of a young unmarried lady with a prolapsed ovary in Douglas's pouch on left side; it was adherent, and pressure produced distressing sexual excitement. He had always noticed that pressure on the prolapsed ovary produces great sickness. This was pointed out as diagnostic by Dr. Greenhalgh. Had Dr. Barnes met with either of these symptoms in his cases?

Mr. HULKE supposed there were but few engaged in hospital practice who had not met with such cases. Of course, in the absence of dissection, precise diagnosis must be difficult. In 1871 many cases were recorded by Englisch—viz., thirty-eight cases of external hernia of the ovary; of these as many as twenty-seven were cases of inguinal hernia, and ten or twelve of them were double, and where double it was almost always congenital. It is possible that in the case operated on by Mr. Pollock the process of peritoneum, etc., was obliterated by the previous pressure of the truss. When the hernia is congenital it is accompanied by the Fallopian tube. In the greater number of instances there is a persistent patent process of peritoneum, so that there is a risk of peritonitis following removal. Each case must be adjudged on its own merits, as regards operation. He had seen cases where the pressure of a truss could be borne, others where it produced great misery. The influence of menstruation was well marked in a case under Mr. G. Lawson's care some years ago; the suffering was so great that the patient begged for the removal of the ovary, which was done by Mr. Lawson.

Mr. LANGTON said there was always a difficulty in deciding whether the swelling is an ovary or not; for even in Dr. Chambers's case, the true nature of the gland (it was found to be testicle) was only discovered by microscopical examination. His own experience of twenty years at the Truss Society showed him that there were a number of movable tumours in adults and infants which were doubtless ovaries. In the last nine years at the Truss Society there had been 4084 cases of inguinal hernia, 589 congenital, the rest acquired; no less than 67 were instances of these tumours, all of which were inguinal, with one doubtful exception (? femoral). Of these 67, 42 were congenital, and 25 acquired. The number of irreducible congenital cases was 13; and of the 29 irreducible, all but 2 were afterwards reduced. This was contrary to Englisch's statistics (New Sydenham Society's Biennial Retrospect, p. 291, 1871–72). Of the 25 non-congenital cases, 8 were reducible and 17 irreducible; which also was at variance with Englisch's statement. In the congenital cases, all but 2 were double. The effects with regard to the menstrual period varied very much; in some they swelled materially with fluid, which, on receding, left the ovary the size of a walnut. In those cases not influenced by menstruation, the prolapse probably takes place early, so that the ovary is ill-developed. In the 4 or 5 where there was periodic excitement a hollow pad gave comfort, and in all others the application of a truss behind the ovary prevented the intrusion of any epiplocele or enterocele. In congenital hernia of the ovary—if on the right side—five per cent. were irreducible; if on the left, twice that proportion: a ratio which holds also for adult cases, and is similar to the same condition of the testis.

Dr. HEYWOOD SMITH thought Dr. Routh's observation of interest, for it is very rare to have a sensation of sexual excitement such as that described by Dr. Routh in his case; and perhaps it had some relation to the adhesions there present involving branches of the pudic nerve.

Dr. BARNES, in reply, said that most of the observations made were supplementary to his paper. Mr. Lawson's case was related in detail in the paper. The remarks of Messrs. Hulke and Langton supported the observations set forth by Cruveilhier, whose accuracy in all matters Dr. Barnes had often confirmed. Cruveilhier says that these cases are mostly congenital; more on the left than right side, and more often inguinal than otherwise. Dr. Barnes had not himself seen distinct evidence of sexual excitement, as described by Dr. Routh; as a rule, pressure produces mere pain. There is one case well known to obstetric physicians, where the ovaries swell enormously at every menstrual epoch to the size of a Tangierine orange, and then subside. Pressure on an ovary prolapsed in Douglas's pouch produces much pain. At present he has a case in hospital where the organ is probably diseased. The frequency of left-sided prolapse was probably due to the greater length and laxity of the left round ligament, and the greater depth of Douglas's pouch on the left than on the right side. This difference between the two sides accounted for other pathological phenomena—*e. g.*, hæmatocele is almost invariably left-sided—and may also explain the more frequent occurrence of adhesions in connection with the shorter right ligament. Ovarian hernia seemed to be more frequent than he had imagined, and instances come largely under the observation of surgeons, especially of those who see much of hernia generally. It was a field for physiological research, and also for surgical study. He thought that when there was pain and distress, it was better to remove the organ, which was liable to become inflamed and diseased, whilst trusses were apt to cause distress. In Mr. Lawson's case, the previous pressure of a truss had probably caused adhesions obliterating the process of peritoneum.—*Lancet*, Jan. 28, 1882.

Case of Double Oöphorectomy.

Dr. DE ZOUCHE records (*Australian Med. Journal*, April 15, 1881) the interesting case of a lady, aged 30, who had been well until her confinement. After the lying-in was at an end, severe ovarian pain appeared. The pain so increased in severity that, in spite of all remedies, it became intolerable. For days she could take no sustenance, except a cup of tea. She seldom slept a whole hour at one time. Sometimes she would be unable to stand, at other times she would roll about the floor in pain. She had not been twenty yards from the house since her confinement, as walking caused her much pain. Dr. de Zouche, therefore, performed oöphorectomy by the abdominal section. Immediately after the operation both ovaries were weighed. The left weighed 120 grains, the right 113 grains. Both contained a number of cysts about the size of a pea. On cutting into one of these, a clear watery fluid spouted out. Carbolic precautions were used. On the twenty-ninth day she was able to sit in the garden. The patient has been able to eat and sleep well since the operation. The improvement has been decided, and the patient is glad the operation has been done.—*London Med. Record*, Oct. 15, 1881.

Method of Exploring the Ureters in Women.

Dr. PAWLICK describes in the *Centralblatt für Gynækologie*, Oct. 15, 1881, a new method of exploring the ureters in women, by which anything of the nature of a preliminary operation, even dilatation of the urethra, is avoided. for it is simply into the vagina, not into the bladder, that the guiding finger is inserted. He has discovered, he says, that there are two furrows on the anterior wall of the vagina, which, starting from a common point situated a short distance behind the bulge of the urethra, diverge at an obtuse angle, and pass backward and outward. Near the cervix uteri they are connected by a transverse furrow, thus forming a triangle that corresponds with the trigone. The direction of each lateral furrow is coincident with that of the ureter of the same side, and the intersection of the lateral with the transverse furrow is nearly at the situation of the mouth of the ureter. Hence, after introducing the sound into the bladder (the patient being in the knee-chest posture, with the perineum retracted, so as to expose the parts to view), its point need only be guided slightly with the finger in the vagina. The instrument, it is said, is easily made to enter the ureter in this way, and thus in removing the uterus it is easy to avoid injury of the ureter. —*N. Y. Med. Journ. and Obstet. Rev.*, Jan. 1882.

"Navel-Ill" in Children.

It is well known to obstetric practitioners that there is met with sometimes in new-born children an affection of the navel which appears to lead to pyæmia. Some years ago Mr. Jonathan Hutchinson communicated to the Obstetrical Society of London an account of a similar disease occurring in lambs. In those which he had dissected he found purulent inflammation of the umbilical veins, with pyæmic abscesses in the liver, and in some peritonitis, pleuritis, pneumonia, and joint-affection also occurred. In the following year Dr. George Roper brought before the same society two cases of umbilical phlebitis with pyæmia. Both the cases had occurred in the practice of the same medical man, and the mother of one of the children had died from pyæmia. His paper contained a reference to the work of Dr. Hasse (published by the Sydenham Society), in which that author had collected ten cases of a similar affection. Dr. Arthur Edis, on the same occasion, brought forward a case which he had met with, in which an identical form of disease led to the death of the child. These are almost the only accounts of the subject in our literature.

A recent paper by Dr. Max Runge, of Berlin,[1] contains an interesting account of a larger number of cases than either of the authors above referred to was able to collect. In the Strasburg Lying-in Charity, during the summer of 1876, five cases of navel affection occurred out of 120 deliveries. There were no cases of puerperal fever. In the summer of 1879 an epidemic of puerperal fever appeared, many women dying; but there was no disease among the children. From March to June, 1880, the health of the mothers was exceedingly good; but twenty-six infants suffered from navel affection, sixteen of whom died. Dr. Runge has altogether seen forty-five cases, in twenty-four of which a careful post-mortem examination was made. In every one of the cases he found inflammation of the umbilical arteries, the umbilical vein being healthy. In eight cases this was the only morbid condition present. In one there was syphilitic disease in lungs, supra-renal capsules, and epiphyseal cartilages. Twice cerebral hemorrhages were present, in one accompanied with gangrene of the scalp from pressure with forceps, and in one with gonorrhœal ophthalmia. In fourteen cases there were morbid changes present which were undoubtedly connected with the umbilical affection. In five, pneumonia or pleurisy were the only affections which occurred; in four others they existed along with other changes; and in one (the syphilitic one above mentioned) there was peritonitis. In two there was jaundice, in two erysipelas, in three hypertrophy of the spleen, and in one infarctions of micrococci in that organ.

Dr. Runge draws the following conclusion from his cases: Inflammation of the umbilical arteries is not in all cases a local disease tending to recovery. It may, *per se*, cause death, and it may lead to pyæmia. In the cases in which pyæmia occurred (except the one with gangrene of the scalp) there was no channel except the umbilicus through which the infective poison could have entered the circulation. He believes that the process begins in the connective tissue around the arteries, and then extends to the vessel itself, producing thrombosis and the subsequent changes seen. The precise time at which the morbid process began could not be ascertained. None of the children died during the first three days, three died on the fourth day, eleven between the fifth and eighth days, and ten on or after the ninth day.

He then considers the etiology of the disease. It has been supposed that the infection was derived from disease in the mother. This is negatived in Dr. Runge's cases by the fact that, with the exception of one that died from eclampsia, one that had cystitis, and another in whom there was metritis, all the mothers were well.

The diagnosis is exceedingly obscure. In many of Dr. Runge's cases its existence was not suspected during life. That pus can be squeezed from the umbilicus has been stated to be a sign of this disease; but our author finds that this is only seldom the case with arteritis, and that it occurs in other conditions, so that it is not to be relied on. It has been said that jaundice occurs with umbilical phlebitis, but not with arteritis: this is shown by Dr. Runge's cases to be erroneous. From the uncertainty of the diagnosis it follows that the prognosis is equally obscure. The death-rate of umbilical disease in the cases observed by our author was about 45 per cent.

Assuming that the disease under consideration arises from septic infection, and that the septic infection gains access to the system through the umbilicus, the most obvious source of such infection is the dead bit of the cord between the abdominal wall and the ligature. To prevent the disease, therefore, it would seem to be first necessary to insure an aseptic condition of this structure. Dr. Runge has therefore carried out a careful experimental investigation into different methods of dealing with the remnant of the cord after its ligature. He compared the behaviour of different bits of cord under the following conditions: 1. Simply exposed to the air; 2. Inclosed in a glass case, so that evaporation of moisture was prevented; 3. Wrapped in a rag soaked in carbolic oil; 4. Wrapped in a dry rag. He found that Nos. 1 and 4, which were simply kept dry, quickly mummified without smell; No. 2, in which evaporation was prevented, soon stank; No. 3 did not get fetid, but did not shrivel up. From these experiments the best way of dealing with the bit of cord is obvious.

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[1] Zeitschrift für Geburtshülfe und Gynäkologie, Bd. vi. Heft 1.

A most important point remains to be mentioned, viz., that, with the prevalence of this navel affection, there were a remarkable number of cases of purulent ophthalmia. What the connection is—whether the eyes were infected from the umbilicus, or *vice versâ*—our author is unable to express an opinion.

Another point of interest is, that a striking number of the children who died were premature. This, in fact, seems the chief element in prognosis, for the children at term who were attacked mostly survived.

For the prevention and cure of this malady the chief points seem to be: 1. To keep the bit of cord which remains attached as dry as possible; 2. The greatest care in washing and dressing the child, so that there shall be no possibility of contact between contagious pus or the maternal discharges and the eyes or umbilicus of the child. As an application to the umbilicus, Dr. Runge recommends a powder composed of salicylic acid and starch.—*Med. Times and Gaz.*, Nov. 5, 1881.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Antidotism.

Dr. KOBERT (*Schmidt's Jahrb.*, Jan. 1881) gives a review of three memoirs of Husemann and others on this subject (*Arch. für Exper. Pathol. u. Pharmakol.*, Band vi. p. 335; Band ix. p. 414; Band x. p. 101). The first of these, by Husemann in collaboration with Krüger, treats of the antagonism of chloral and strychnia. The following are the conclusions arrived at: 1. There is no reciprocal antagonism between strychnia and chloral (in the sense that the action of either poison is annihilated by the other). 2. When toxic doses of strychnia and chloral are given simultaneously, the action of the latter predominates, and the symptoms of depression are observed. 3. There is, however, a unilateral antagonism in this sense, that the animals (rabbits) poisoned with strychnia may be saved by a non-toxic quantity of chloral, but yet sufficient to induce profound sleep. A cure may be effected, even when five or six times the fatal dose of strychnia is given; but beyond this, death supervenes, though this is retarded. 4. Small hypnotic doses of chloral are insufficient to save an animal poisoned by a quantity of strychnia appreciably greater than the fatal dose. 5. Chloral, when employed in sufficient doses, has proved efficacious in the case of men poisoned by strychnia. It is preferable to other counter-poisons, as morphia, Indian hemp, and chloroform, some of which exert their action too tardily; and others, such as curare and potassium bromide, have the defect of leaving the patient conscious, and thus exposed to the moral tortures which assail him. 6. The favourable influence of chloral in acute strychninism cannot be explained by a direct action upon the parts of the central nervous system which the strychnia has placed in a state of exaggerated excitability. It may be attributed in great part to the lowering by the chloral of the activity of the parts which conduct the excitation to the spinal cord. It thus prevents the too frequent repetition of tetanic spasms, and diminishes the danger of death which they involve. In nearly every case, the duration and intensity of the attacks have been notably diminished. 7. In the treatment of strychnia poisoning by large doses of chloral, a considerable diminution of the frequency of the respiratory movements is constantly observed; on the cessation of such attack, nevertheless the respiration is accelerated. There is thus a diminution of the normal temperature. 8. Death from chloral, either taken internally or subcutaneously injected, is almost always due to arrest of respiration. It is only when the chloral reaches the heart-muscle in sufficiently large quantities, that death results from cardiac paralysis. 9. In acute chloralism, asphyxia supervenes in part from the progressive diminution of the energy of the respiratory centre, partly from œdematous infiltration of the pulmonary parenchyma; and these lesions are always found more or less pronounced at the necropsy of rabbits poisoned by chloral. The slowing and feebleness of the cardiac contractions have only a secondary influence. 10. Strychnia cannot be employed as an antidote for chloral. It neither hinders the progressive paralysis of the respiratory centres, nor the production of pulmonary œdema. Rabbits poisoned with chloral, and to which strychnia was afterwards given in fatal or even in simply toxic quantity, died from diminution of the frequency of respiration, and the period was not abridged. The lesions found on *post-mortem* examination were those produced by chloral. 11. In cold-blooded animals which have been chloralized, strychnia does not prevent enfeeblement of the heart, nor death from paralysis of that organ. 12. Strychnia does not modify the lowering of temperature constantly observed in acute chloralism. 13. Strychnia does not prevent the hæmaturia and albuminuria observed after subcutaneous injections of chloral. 14. Increase of temperature, and of the frequency of the respiratory movements, are favourable prognostics in chloral-poisoning. 15. The causticity of strong solutions of chloral, and the tolerance of some animals for the drug, have led experimenters into error in regarding strychnia as exercising a favourable influence in chloralism. 16. When in chloral poisoning reflex excitability is abolished, strychnia, even when employed in much larger than a fatal dose, cannot restore this excitability. 17. When strychnine and chloral are simultaneously administered, the heart always stops in diastole. In another research, Husemann has demonstrated the inefficaciousness of camphor, oil of cajeput, ammoniacum, and the principal excitants in poisoning by chloral. Atropine gives the best results, but it must be given in repeated doses. In another research, in collaboration with Fliescher and Wehr, the author has shown that chloral is as efficacious in poisoning by brucine and thebaine as in strychninism. He remarks that thebaine not only convulses, but also greatly diminishes sensibility. Chloral acts counter to codeine and calabarine only when given in quantity one-and-a-half times greater than the fatal dose. In poisoning by sal ammoniac, chloral is useful in moderating the convulsions, but it does not prevent death. The salts of barium and strontium, according to present observations, act as convulsant cerebral poisons. Böhm has observed in frogs a great analogy between the symptoms of intoxication by the salts of barium and those of poisoning by picrotoxine and conicine; but rabbits killed by barium chloride have no convulsions till shortly before death, and these are explicable by paralysis of the heart. Chloral, as might be expected, is powerless against barium and strontium; and the same applies to carbolic acid. Besides, it is known that the convulsions produced by this last agent are not of central origin. Husemann has sought to render chloral more efficacious in strychnia intoxication by combining it with some other antitetanic medicament. In conjunction with Hessling, he has employed first a mixture of chloral and potassium bromide, which has been vaunted by Bivine. This mixture is less efficacious than chloral alone. The bromide alone does not prevent, but only retards the convulsions. Alcohol is not so efficacious as chloral. Since physostigmine is now met with in commerce in a state of purity, and free from convulsant calabarine, it has been demonstrated that it is eminently paralyzing. Rabbits to which an otherwise fatal dose of strychnia is given do not succumb, if they be previously brought well under the influence of physostigmine. Husemann's researches may thus be summarized from a practical point of view. In strychnia-poisoning neither potassium bromide, nor physostigmine, nor alcohol should be employed; chloral should be given unmixed with other medicaments.—*London Med. Record*, Jan. 15, 1882.

ROSSBACH (*Pflüger's Archiv*, Bd. xxi.) replies to the attack made upon his conclusions by Heidenhain and Luchsinger, that there is no reciprocal antagonism of poisons, a conclusion which has received confirmation at the hands of Husemann, Mariné, and Nawroki. Rossbach, working in conjunction with Anrep, arrives at the following conclusions: 1. In the sudoriparous and salivary apparatus of animals (dogs) two parts are to be taken into account in considering the actions of poisons, such as atropine, pilocarpine, and physostigmine—the nervous apparatus and the cellulo-glandular portion; and these are in the same relation as the terminal motor apparatus and the contractile cells. 2. The nervous part of these glands is influenced by very small doses of the poisons; paralyzed by atropine, excited by pilocarpine and digitaline; the cellulo-glandular portion remaining insensible to the same doses. Hence small doses of atropine diminish the salivary and sudoriparous secretions only by paralysis of the nervous apparatus, and it is by exciting this apparatus that pilocarpine and physostigmine increase those secretions. 3. In relatively larger doses, the cellulo-glandular, as well as the nervous, portion of the apparatus is affected by the poisons. Large quantities of atropine check the secretion of sweat and saliva by paralyzing both those portions of the glands, whilst large quantities of pilocarpine and of physostigmine exaggerate it by simultaneous excitation of those same parts of the glands. 4. Atropine acts in the above-mentioned manner in much smaller doses than pilocarpine and physostigmine. In other words, the glandular portions are much more sensitive to atropine than to the two latter alkaloids. 5. Atropine surpasses in its action pilocarpine and physostigmine when given in corresponding doses. 6. If atropine be given on the one hand and pilocarpine on the other, either simultaneously or successively, the action of atropine always preponderates for corresponding doses of the other poison. 7. If atropine be given in small doses, so as to paralyze the nervous and leave intact the cellulo-glandular portions of the glands, the latter may be excited by large doses of pilocarpine or of physostigmine. The exaggerated secretion which results simulates a double physiological antagonism. 8. In no case does pilocarpine annihilate the action of atropine upon the pupil.—*London Med. Record*, Jan. 15, 1882.

Tolerance of Poisons.

ROSSBACH has studied this subject (*Pflüger's Archiv*, Bd. xxi.), and arrives at the following conclusions: 1. Tolerance of poisons comes on very rapidly (except in nervous and hysterical subjects), and it is thus that at the third or fourth cigar symptoms of tobacco-poisoning cease, and that the quantity of alcohol necessary to produce intoxication increases with use. When atropine is given to dogs daily, certain symptoms are observed at first which disappear in the course of a few days—such as hyperæsthesia of the skin, trembling of the body, etc. The animals then become as lively and vivacious as unpoisoned animals. 2. The organs of man and of animals become equally habituated to poisons, and in the same organism each organ behaves differently towards these. 3. There are organs which never become habituated to poisons, in the sense that they always behave towards them as at the beginning of the administration. It is thus that morphia, always administered in the same dose, induces sleep for weeks or months; that the smoker, consuming a uniform quantity of tobacco, feels, at the end of years, the same beneficial influence continued. It is the same with tea and coffee. Certain organs are influenced by the use of atropine after long usage as at the commencement—the pupil always dilates, the salivary secretion is diminished. It is precisely those organs which are most impressionable which are least influenced by habitual use of poisons. 4. Nevertheless those organs, by the the prolonged use of a poison, remain influenced by it for a period of time which progressively diminishes; hence drunkards, and those addicted to morphine, experience the need of more and more frequent doses of alcohol or of morphia. 5. Another series of organs reacts differently towards the same poison, according as it is administered for the first time or after a lengthened interval. Thus atropine acts at first upon the heart by paralyzing the vagus, whilst at a later period it paralyzes the motor nerves and the muscles of that organ. 6. Again, there are organs which become habituated to certain poisons (tobacco, alcohol, morphia), so that after a certain time they present no functional derangement. 7. These propositions are not valid, except where the dose remains the same. When the dose is increased, however slowly, a time comes when the poison again exhibits its action. 8. In an organism accustomed to a certain dose of the poison, a much larger dose acts in the same manner as a small dose on an unhabituated organism. 9. In general, the symptoms of chronic poisoning are extended to more organs and functions than those of acute poisoning. Thus in chronic morphia-poisoning we observe restlessness, insomnia, hyperæsthesia, neuralgia, an exaggeration of reflex movements, anorexia, malaise, vomiting, palpitation, albuminuria, malnutrition; whilst in acute morphinism purely nervous symptoms alone are observed. 10. In man and animals, if the dose of the poison be not continually augmented, but be kept at medium quantity, this amount may be supported with impunity for the rest of life. The proof of this is, that thousands of persons arrive at an advanced age who have taken for long periods tobacco, alcohol, coffee, or opium. 11. If the use of the poison be broken off at the end of a relatively short time—weeks, months, or it may be, in exceptional cases, years—health is restored in the course of a few days. But if the cessation take place after a more considerable period of use of the poison, certain morbid phenomena are observed, such as trembling, acute delirium, intellectual feebleness, and lowness of spirits. If now the use of the poison be recommenced, these symptoms rapidly disappear. 12. There is an epoch at which reparation of tissue is still possible, and one when this is no longer possible. In this last case, there is a notable change in the chemical composition of the substratum of the tissues; and this modification is appreciable by the microscope in certain organs, as, *e. g.*, the liver. 13. In order to explain the effects of chronic poisoning, we may say that the organs are not more impressionable to normal stimuli (carbonic acid, ferments), but only to the poison; failing this, the body is deprived of excitants, and a profound depression of most of the functions is produced. 14. The fact that certain organs end by being no longer impressionable to poisons, is comparable to the immunity which certain organisms enjoy towards certain organized poisons (those of infectious diseases) when once they have been the seat of their action.—*London Med. Record*, Jan. 15, 1882.

Phosphorus Poisoning treated by Turpentine.

M. **MAREAU** has made a number of experiments on rabbits, in order to attempt to determine the cause of death in phosphorus poisoning, and at the same time to examine into the value of turpentine as an antidote. Rabbits were selected because they do not vomit the poison; the preparation used was 1 gramme of phosphorus dissolved in 400 grammes of sweet oil of almonds. He places the fatal dose at about 1 gramme per 100 kilo. body weight of the animal.

In the normal condition, the rectal temperature of the rabbit is about 39.2°, and the proportion of oxygen in the blood, estimated by the method of Schutzenberger, is 15 c. c. to each 100 grammes of blood. When, however, rabbits are poisoned with phosphorus, their temperature falls, on an average about 3°, urea is diminished in the urine, and the quantity of oxygen in the blood may be reduced to 13 c. c. to 100 grammes. If now spirit of turpentine is administered, the progressive reduction of the temperature is stopped, urea is eliminated in increased quantity, and the proportion of oxygen in the blood becomes normal.

M. Mareau thinks that possibly the turpentine unites with the phosphorus to form a compound which is less poisonous than phosphorus alone, and which has a weaker affinity for oxygen. He finds that the purified spirit of turpentine is much less efficacious than the commercial.—*Revue Scientifique*, Dec. 10, 1881.

Poisoning with Boracic Acid.

These two cases are recorded by Dr. S. E. **MOLODENKOW**, of Moscow, in *Wratsch*, No. 31, 1881. The first patient was 25 years of age, and suffered from pleuritic effusion of three weeks' standing. Paracentesis was performed without chloroform, and the pleural cavity washed out with a five per cent. solution of boracic acid. The process of washing out lasted one hour, and thirty pounds of the solution were used, part being allowed to remain in the cavity. Immediately after the operation there was a slight feeling of improvement, but this was soon followed by nausea and persistent vomiting. Next day the vomiting continued, the pulse was very rapid and feeble, the patient was extremely weak and suffered from hiccup. Towards evening erythema appeared on the face. On the third day the erythematous blush had extended to the neck, chest, and abdomen; the face, and especially the eyelids, were swollen; the vomiting, hiccup, and general depression persisted; the pulse was scarcely perceptible, but consciousness was undisturbed. On the fourth day the erythema had spread to the thigh, while on the face and throat small pearly vesicles appeared; the pulse was still almost imperceptible, the vomiting continued, the patient's vision was dim, but consciousness was unaffected. Death took place towards evening of the fourth day. There was no *post-mortem* examination.

The second patient was aged 16, and suffered from a large lumbar abscess, which was opened and washed out as in the case just described, with a similar solution and for the same length of time. A precisely similar train of symptoms was observed, and death occurred on the third day. At the section the first and second lumbar vertebræ were found to be widely affected with caries, while pus had burrowed along the right psoas muscle. Nothing else abnormal was found except a few small extravasations of blood on the pericardium, corresponding to the anterior surface of the left auricle and ventricle.

The symptoms of boracic acid poisoning may be thus stated: Persistent vomiting; hiccup; erythema, beginning on the face; a slight temporary rise in temperature; and diminution of the heart's contractile power to such a degree as ultimately to amount to paralysis of the heart. Therapeutically, the author suggets morphia and stimulants as worthy of trial.—*Glasgow Medical Journal*, December, 1881.

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JEFFERSON MEDICAL COLLEGE,

PHILADELPHIA.

The Fifty-seventh Session of the Jefferson Medical College will begin on Monday, October 3d, 1881, and will continue until the end of the third week of March, 1882. Preliminary Lectures will be held from Monday, 12th of September.

PROFESSORS.

JOSEPH PANCOAST, M.D.,
General, Descriptive, and Surgical Anatomy (Emeritus).

S. D. GROSS, M.D., LL.D., D.C.L. Oxon., LL.D. Cantab.,
Institutes and Practice of Surgery.

ELLERSLIE WALLACE, M.D.,
Obstetrics and Diseases of Women and Children.

J. M. DA COSTA, M.D.,
Practice of Medicine.

WM. H. PANCOAST, M.D.,
General, Descriptive, and Surgical Anatomy.

ROBERT E. ROGERS, M.D.,
Medical Chemistry and Toxicology.

ROBERTS BARTHOLOW, M.D., LL.D.,
Materia Medica and General Therapeutics.

HENRY C. CHAPMAN, M.D.,
Institutes of Medicine and Medical Jurisprudence

The enlargement of the College, now in progress, will enable the Faculty to perfect the present system of *Practical Laboratory Instruction*, in all the Departments. Rooms are assigned in which each Professor, with his Demonstrators, will instruct the Class, in Sections, in direct observation and hand-work in the Chemical, Pharmaceutical, Physiological, and Pathological Laboratories. Operative and Minor Surgery, and investigation of Gynæcological and Obstetric conditions on the *Cadaver*, will be taught, as also Diagnosis of Disease on the living subject.

This course of Instruction is *free of charge, but obligatory upon* candidates for the Degree, except those who are Graduates of other Colleges.

A Spring Course of Lectures is given, beginning early in April, and ending early in June. There is no additional charge for this Course to matriculates of the College, except a registration fee of five dollars; non-matriculates pay forty dollars, *thirty-five of which, however, are credited on the amount of fees paid for the ensuing Winter Course.*

CLINICAL INSTRUCTION is given *daily* at the HOSPITAL OF THE JEFFERSON MEDICAL COLLEGE throughout the year by Members of the Faculty, and by the Hospital Staff, which is constituted as follows:—

Surgeons.

JOHN H. BRINTON, M.D.,
S. W. GROSS, M.D.,
R. J. LEVIS, M.D.

Ophthalmic Surgeon.

Prof. WILLIAM THOMSON, M.D.

Aural Surgeon.

L. TURNBULL, M.D.

Physicians.

J. SOLIS-COHEN, M.D.,
JAMES C. WILSON, M.D.,
OLIVER P. REX, M.D.,
W. W. VANVALZAH, M.D.

Gynæcologists.

F. H. GETCHELL, M.D.,
J. EWING MEARS, M.D.

Pathologist.

MORRIS LONGSTRETH, M.D.

FEES.

Matriculation Fee (paid once)	$5 00
Ticket of each Professor (7) $20	140 00
Practical Anatomy	$10 00
Graduation Fee	30 00

Fees for a full course of Lectures to those who have attended two full courses at other (recognized) Colleges—the matriculation fee, and	$70 00
To Graduates of less than three years of such Colleges—the matriculation fee, and	50 00
To Graduates of three years, and upwards, of such Colleges—the matriculation fee only.	

The Annual Announcement, giving full particulars, will be sent on application to

ELLERSLIE WALLACE, *Dean.*

Graduates who may see this notice will confer a great favor by sending to the Dean a postal card with the correct names and residences of themselves, and of other graduates in their vicinity, to whom announcements may be sent.

UNIVERSITY OF PENNSYLVANIA—MEDICAL DEPARTMENT.

Thirty-Sixth Street and Woodland Avenue (Darby Road), Philadelphia.

One Hundred and Seventeenth Annual Session, 1882-83.

PROFESSORS.

WILLIAM PEPPER, M.D., Provost.

HENRY H. SMITH, M.D., Emeritus Professor of Surgery.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.

RICHARD A. F. PENROSE, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children.

ALFRED STILLÉ, M.D., LL.D., Professor of Theory and Practice of Medicine, and Clinical Medicine.

D. HAYES AGNEW, M.D., LL.D., John Rhea Barton Professor of Surgery and Clinical Surgery.

WILLIAM PEPPER, M.D., LL.D., Professor of Clinical Medicine.

WILLIAM GOODELL, M.D., Professor of Clinical Gynæcology.

JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.

HORATIO C. WOOD, M.D., Professor of Materia Medica, Pharmacy, and General Therapeutics.

THEODORE G. WORMLEY, M.D., LL.D., Professor of Chemistry.

JOHN ASHHURST, Jr., M.D., Professor of Clinical Surgery.

HARRISON ALLEN, M.D., Professor of Physiology.

WILLIAM F. NORRIS, M.D., Clinical Professor of Diseases of the Eye.

GEORGE STRAWBRIDGE, M.D., Clinical Professor of Diseases of the Ear.

HORATIO C. WOOD, M.D., Clinical Professor of Nervous Diseases.

LOUIS A. DUHRING, M.D., Clinical Professor of Diseases of the Skin.

Matriculates who have not received a collegiate degree are required to pass a preliminary examination in English and Physics (for details of which see Announcement), and to attend three winter courses of instruction of six months each, consisting of graded didactic lectures, clinical lectures, and practical work in laboratories and hospitals.

In the graded curriculum adopted, the elementary branches are taught in the *first* course, and students are finally examined at its conclusion upon General Chemistry, Materia Medica and Pharmacy. In the *second* term, while a sufficient repetition of unfinished branches is secured, certain more practical ones are added, and the examinations on Anatomy, Physiology, and Medical Chemistry at the end of the term are final. In the *third* course is added practical bedside instruction in Medicine, Surgery, and Gynæcology, with clinical facilities in the specialties: and, at its end, students are examined on General Pathology and Morbid Anatomy, Therapeutics, Theory and Practice of Medicine, Surgery, and Obstetrics.

Students, who have attended one course in a regular* medical school, will be admitted as students of the second course in the University, after having satisfactorily passed an examination in General Chemistry and Materia Medica and Pharmacy. Students who have attended two courses in a regular medical school, will be admitted as students of the third course after examination in General and Medical Chemistry, Materia Medica and Pharmacy, Anatomy, and Physiology.

Graduates of other regular medical schools in good standing will be admitted as students of the third course in this institution without any examination.

Graduates of Colleges of Pharmacy and Dental Colleges in good standing are admitted to the *second* course in the University without an examination.

In the Spring Session, beginning the latter part of March, and ending about the middle of June, a valuable course on practical and scientific subjects by a large corps of professors and lecturers is given; and the laboratories of Chemistry, Pharmacy, Histology, Physiology, and Pathology are open, affording a valuable post-graduate course.

A VOLUNTARY FOURTH YEAR OR POST-GRADUATE COURSE has been established, for particulars of which see Catalogue.

The Lectures of the Winter Session of 1882-83 *will begin on Monday, October* 3, *and end on the last day of March.*

The Preliminary Course will begin on the second Monday in September.

FEES IN ADVANCE.—1st course of lectures, including matriculation and dissection, $155. Dissecting material one dollar a part. 2d course, including dissection, $150. 3d course, including operating and bandaging and graduation fee, $150.

For Announcement giving full particulars address

JAMES TYSON, M.D., SECRETARY,
P. O. Box 2838, *Philadelphia.*

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* Homœopathic and Eclectic schools are not recognized as being in this category.

BELLEVUE HOSPITAL MEDICAL COLLEGE,

CITY OF NEW YORK.

SESSIONS OF 1881–82.

At and after the Session of 1881–82, *the College will return to its former requirements as regards fees and graduation; viz., those in force before the Session of* 1880–81.

The COLLEGIATE YEAR in this Institution embraces the Regular Winter Session and a Spring Session. The REGULAR SESSION will begin on Wednesday, September 21, 1881, and end about the middle of March, 1882. During this Session, in addition to four didactic lectures on every week-day except Saturday, two or three hours are daily allotted to clinical instruction. Attendance upon two regular courses of lectures is required for graduation. The SPRING SESSION consists chiefly of recitations from Text-Books. This Session begins about the middle of March, and continues until the middle of June. During this Session, daily recitations in all the departments are held by a corps of Examiners appointed by the Faculty. Short courses of lectures are given on special subjects, and regular clinics are held in the Hospital and in the College building.

FACULTY.

ISAAC E. TAYLOR, M.D.,
Emeritus Prof. of Obstetrics and Diseases of Women and Children, and President of the Faculty.

JAMES R. WOOD, M.D., LL.D.,
Emeritus Professor of Surgery.

FORDYCE BARKER, M.D., LL.D.,
Prof. of Clinical Midwifery and Diseases of Women.

BENJAMIN W. McCREADY, M.D.,
Emeritus Professor of Materia Medica and Therapeutics, and Professor of Clinical Medicine.

AUSTIN FLINT, M.D.,
Prof. of the Principles and Practice of Medicine, and Clinical Medicine.

W. H. VAN BUREN, M.D., LL.D.,
Prof. of Principles and Practice of Surgery, and Clinical Surgery.

LEWIS A. SAYRE, M.D.,
Professor of Orthopedic Surgery and Clinical Surgery.

ALEXANDER B. MOTT, M.D.,
Professor of Clinical and Operative Surgery.

WILLIAM T. LUSK, M.D.,
Professor of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.

A. A. SMITH, M.D.,
Professor of Materia Medica and Therapeutics, and Clinical Medicine.

AUSTIN FLINT, Jr., M.D.,
Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

JOSEPH D. BRYANT, M.D.,
Professor of General, Descriptive, and Surgical Anatomy.

R. OGDEN DOREMUS, M.D., LL.D.,
Professor of Chemistry and Toxicology.

EDWARD G. JANEWAY, M.D.,
Prof. of Diseases of the Nervous System, and Clinical Medicine, and Associate Professor of Principles and Practice of Medicine.

PROFESSORS OF SPECIAL DEPARTMENTS, Etc.

HENRY D. NOYES, M.D.,
Professor of Ophthalmology and Otology.

EDWARD L. KEYES, M.D.,
Prof. of Cutaneous and Genito-Urinary Diseases.

JOHN P. GRAY, M.D., LL.D.,
Professor of Psychological Medicine and Medical Jurisprudence.

FREDERICK S. DENNIS, M.D., M.R.C.S.,
Professor Adjunct to the Chair of Principles and Practice of Surgery.

WILLIAM H. WELCH, M.D.,
Professor of Pathological Anatomy and General Pathology.

J. LEWIS SMITH, M.D.,
Clinical Professor of Diseases of Children.

ERSKINE MASON, M.D.,
Clinical Professor of Surgery.

JOSEPH W. HOWE, M.D.,
Clinical Professor of Surgery.

LEROY MILTON YALE, M.D.,
Lecturer Adjunct on Orthopedic Surgery.

BEVERLY ROBINSON, M.D.,
Lecturer on Clinical Medicine.

FRANK H. BOSWORTH, M.D.,
Lecturer on Diseases of the Throat.

CHARLES A. DOREMUS, M.D., Ph.D.,
Lecturer on Practical Chemistry and Toxicology, and Adjunct to the Chair of Chemistry.

FREDERIC S. DENNIS, M.D., M.R.C.S.,
WILLIAM H. WELCH, M.D.,
Demonstrators of Anatomy.

FACULTY FOR THE SPRING SESSION.

FREDERICK A. CASTLE, M.D.,
Lecturer on Pharmacology.

WILLIAM H. WELCH, M.D.,
Lecturer on Pathological Histology.

CHARLES A. DOREMUS, M.D., Ph.D.,
Lecturer on Animal Chemistry.

T. HERRING BURCHARD, M.D.,
Lecturer on Surgical Emergencies.

ANDREW R. ROBINSON, M.D., L.R.C.P. & S. Edinburgh, Lecturer on Normal Histology.

CHARLES S. BULL, M.D.,
Lecturer on Ophthalmology and Otology.

FEES FOR THE REGULAR SESSION.

Fees for Tickets to all the Lectures, Clinical and Didactic	$140 00
Fees for Students who have attended two full courses at other Medical Colleges and for Graduates of less than three years' standing of other Medical Colleges	70 00
Matriculation Fee	5 00
Dissection Fee (including material for dissection)	10 00
Graduation Fee	30 00

No Fees for Lectures are required of Graduates of three years' standing, or of third-course Students who have attended their second course at the Bellevue Hospital Medical College.

FEES FOR THE SPRING SESSION.

Matriculation (Ticket valid for the following Winter)	$5 00
Recitations, Clinics and Lectures	35 00
Dissection (Ticket valid for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address Prof. Austin Flint, Jr., Secretary, Bellevue Hospital Medical College.

ATLANTA MEDICAL COLLEGE.

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ATLANTA, GEORGIA.

The Twenty-fifth Annual Course of Lectures in this Institution will commence on Thursday, the 12th of October, 1882, and close on the 1st of March, 1883.

FACULTY.

A. W. Griggs, M.D., Emeritus Professor of Practice.

J. G. Westmoreland, M.D , Emeritus Professor of Materia Medica and Therapeutics.

W. F. Westmoreland, M.D., Professor of Principles and Practice of Surgery.

Wm. Abram Love, M.D., Professor of Physiology.

V. H. Taliaferro, M.D., Professor of Obstetrics and Diseases of Women and Children.

W. S. Armstrong, M.D., Professor of General and Descriptive Anatomy, Lecturer on Clinical Medicine.

A. W. Calhoun, M.D., Professor of Diseases of the Eye, Ear, and Throat.

J. H. Logan, A.M., M.D., Professor of General and Medical Chemistry.

H. V. M. Miller, M.D., LL.D., Professor of Principles and Practice of Medicine, Lecturer on Clinical Medicine, and Dean of the Faculty.

J. S. Todd, M.D., Professor of Materia Medica and Therapeutics, Lecturer on Clinical Medicine.

James A. Gray, M.D., Lecturer on Venereal Diseases, and Proctor.

D. H. Howell, M.D., Lecturer on Minor Surgery.

C. A. White, M.D., Demonstrator of Anatomy.

The Trustees and Faculty feel secure in presenting the claims of the Atlanta Medical College to those desiring a medical education. They are assured that many causes combine to render this city, of 50,000 people, the great medical centre of the South.

Her extensive railroad connections make it easily accessible from all points.

The energy of her people in every avocation has conferred a prosperity that is proverbial.

The expenses of living, in whatever style, are cheaper, we believe, than in any city of like size in the United States.

Epidemics are unknown in this city. There is no malaria with us. Those who have been affected by this poison in other localities, find here a retreat in which they may recover their health. Students from the North or West may find here, while acquiring their education, protection from the dangers of a more rigorous climate without subjecting themselves to the risk of other diseases.

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The Faculty avail themselves of every facility of clinical and didactic teaching. Not only does Atlanta, with a large proportion of inhabitants dependent on charity for medical attention, afford a vast amount of clinical material, but her central position and railroad facilities draw from a distance a great number of interesting cases that may be presented before the class.

The Faculty constantly and zealously labor to utilize all these advantages in placing the Atlanta Medical College among the foremost in imparting a THOROUGH AND PRACTICAL KNOWLEDGE of medical science in all its principles and details. They claim that its prosperous condition and constantly increasing classes for years past are the highest evidence of the achievement of this object.

☞ All business communications should be addressed to

Dr. JAMES A. GRAY,
Proctor, Atlanta Medical College.

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